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ORIGINAL ARTICLES

MODERN CONCEPTIONS OF UPPER ABDOMINAL DISEASE*

BY JOHN B. DEAVER, M.D., F.A.C.S.

THE two principal factors which contribute to the advancement of medical knowledge and therefore influence progress in any given field of applied medicine, are clinical observation and experimental research.

The clinician, from his broad experience, culls certain impressions of disease, its ravages and possibilities. By recourse to various methods of approach in the conduct of his cases and by logical methods of therapy, systematic attention to every detail, clear vision, and finally the correlation of all these, he acquires a mature judgment which becomes of value to his professional colleagues. The experimentalist and the surgeon, approaching the subject from a different angle, endeavor to place the clinician's more or less empiric methods on a firm basis. Thus in their way their conclusions add to the sum total of knowledge and purpose in therapy.

The diseases of the upper abdomen have always engaged the interest of the profession, but with the years our ideas concerning them have been considerably modified. It is these more modern conceptions that shall claim our attention this evening.

THE LIVER AND THE BILIARY TRACT

No organ in the body carries on such a variety of functions as the liver. Through the portal circulation much of the material absorbed from the upper portion of the digestive tract as far as the transverse colon, is carried to the liver for evaluation and elaboration. It is thus readily seen that any toxin absorbed into the portal circulation will strike the liver first and hardest.

The liver also has important metabolic functions. It is a storehouse for glycogen, and holds this carbohydrate in constant readiness to meet the demands of the body. This is seen, for example, in cases of hyper-insulin-aemia where the patient may go into insulin shock and is readily relieved by a few minims of adrenalin which cause a release of glycogen from the liver.

In addition the liver plays a role in intermediary nitrogen metabolism, elaborates fibrinogen, and also manufactures and secretes bile.

With this multiplicity of function there is of course greater possibility of dysfunction. The liver has shown a remarkable ability to survive the effects of injury by toxins, and if but one-third, approximately, of the entire organ remains intact it will regenerate rapidly and carry on the work previously done by the entire organ. Repeated toxic injury, as in the case of Laennec's cirrhosis, produces first a hyperplasia with early increase, but is followed later by diminution in the size of the liver.

The biliary system consists of hepatic cells, bile capillaries, the hepatic and cystic ducts, the gall bladder, and the common ducts, the last-named opening into the duodenum at the papilla of Vater.

Bile is continuously excreted by the liver cells into the capillary system. It contains three important groups of compounds:

1. Bile pigments.
2. Bile salts.
3. Fatty materials, especially cholesterol.

The bile pigments are the products of hemoglobin catabolism. With increased blood destruction (causing hemolytic jaundice) an excessive amount of hemoglobin is liberated.

Investigators do not agree on the location of the change from hemoglobin to bilirubin, the principal bile pigment. The generally accepted view is that of Mann, Whipple, and Hooper, who hold it to be chiefly extra-hepatic. Hewlett, on the other hand, maintains that it occurs principally in the liver. In this connection Rous states that the hepatic cells possess a threshold for the excretion of bile pigment similar to the glucose threshold of renal cells.

A common finding in disease of the right upper abdomen is jaundice. As we all know, there are two kinds of jaundice: First, that due to increased blood destruction, as found in pernicious anemia, or hemolytic jaundice; second, the obstructive type, due to a block somewhere in the biliary tract. The differentiation between these two kinds of jaundice can often be made

*Read before the Worcester District Medical Society, Worcester, Mass., November 10, 1926.

by the Van den Bergh test. This test is based on Ehrlich's discovery that bilirubin in acid alcoholic solution couples with diazotized sulphanilic acid to form a dye-stuff, azobilirubin. Van den Bergh observed that bilirubin in the serum of patients with obstructive jaundice reacts at once with diazotized sulphanilic acid, giving a deep red color, while bilirubin in the blood serum of hemolytic jaundice gives no reaction unless treated with alcohol, in which case it becomes purple.

An obstruction in the bile passages may be caused by external pressure, as from a neoplasm in the head of the pancreas; or by the presence of gall stones or stones in the common or in the hepatic duct, or by the small so-called "bile thrombi" found in the liver substance, which have been shown by Rous to be a mixture of lipoids, bile pigment and protein, the result of damaged hepatic cells.

The most common cause of surgical jaundice is the presence of gall stones, so that the gall bladder may be regarded as the principal contributing factor to surgical disease of the right upper abdomen; thus giving cholecystitis its high place in the list of the more common ailments of mankind.

Normally the gall bladder acts as a receptacle for the thin bile given off by the hepatic parenchyma, and by reabsorption of fluid the bile becomes concentrated within the gall bladder. During digestion, the expulsion of food particles from the stomach into the duodenum, with the resulting peristaltic activity of the duodenum, produces, according to Graham, a relaxation of the sphincter of Oddi with a resulting inflow of bile into the duodenum. Various investigators have questioned the ability of the gall bladder to contract and Graham doubts the existence of a definite sphincter in the papilla of Vater other than the duodenal musculature. But a certain pressure is maintained in the common bile duct and the gall bladder. With the muscular relaxation at the outlet in the papilla of Vater the outflow of bile naturally occurs under pressure, and since the wall of the gall bladder is distensible, the organ diminishes in size, as the bile is withdrawn. Interference with this function marks the onset of cholecystitis.

Much is being said of the role played by infection in producing gall bladder disease. Symptoms of the disease, such as distress in the region of the gall bladder, may develop at a more or less remote period of months or years after typhoid fever, dysentery, focal infections of the teeth, tonsils, etc. Infection may take place through the blood stream or through the lymph channels and as a rule usually involves the deeper layers before it affects the mucosa. Furthermore, stasis in the biliary tract resulting from obesity, pregnancy, constipation, or visceroptosis certainly is a cardinal predisposing factor to disease of the gall bladder.

The result may be an acute inflammation of the organ or the process may smoulder for years and frequently is not diagnosed until found at autopsy, exitus in many cases having been due to some other affection.

The biliary disturbance may lead to disturbance of other functions as well. The bile salts probably play a leading role in this disturbance. The slow pulse commonly seen in patients with jaundice has been attributed by Stewart to the action of the bile salts on the vagus nerve.

The pancreas and the biliary tract are intimately associated from the aspect of position, function and lymph drainage. Chronic pancreatitis is one of the most common sequels of long-standing disease of the biliary tract. Joslin remarks that gall bladder disease is frequently found in diabetic patients and furthermore warns the profession at large to "take especial pains" to treat cholecystitis as a prophylactic measure against diabetes. Diabetes developing in association with a diseased gall bladder responds rapidly to treatment when the cholecystitis has been cleared up by operation or otherwise.

In Joslin's series of 73 diabetic patients, cholelithiasis was diagnosed at the average age of 45 years and diabetes two years later, at the age of 47 years.

Gall stones, the earliest mention of which, by the way, according to Kellogg, was by a Greek physician Trallianus, who in the fifth century, A. D., referred to them as "dried up tumors, concreted like stones," are a later development of biliary tract disease. The pure cholesterin stone, oval, crystalline, and translucent in its purest form, represents merely excessive concentration of cholesterin in the bile and may be crystallized out by the reabsorption of fluid, during the normal activity of the gall bladder. Nevertheless, one frequently finds a small dirty gray or black nucleus within these stones, and on examination or by culture, typhoid bacilli or streptococci may be discovered. The combination stone, the usual multiple and faceted stone, is composed of bilirubin-calcium, cholesterin, mucus and bile salts, and is beautifully laminated.

The surgical pathology of cholecystitis has been recently studied by Burden. He found that the earliest changes are seen in the mucosa and submucosa and that persistence of infection is favored by deep crypts which occur in the wall of the gall bladder. He emphasizes the frequent occurrence of muscular hypertrophy in chronic calculous cholecystitis and the presence of diverticula in which stones may form or infection be retained resulting in peri-cholecysti-

tis and sometimes in perforation of the gall bladder.

Moynihan believes that "except for the cholesterin stone, symptoms always exist although they may not be recognized." Kellogg states that gall stones are found in ten per cent. of all autopsies, and that this proportion is raised to 25 per cent. in persons over sixty years of age.

So much as to the etiology of cholelithiasis. As to the symptoms, the earliest complaints are as a rule referable to the stomach. This is entirely logical if we remember that embryologically, as shown by McKenzie, the liver with its ducts is an outgrowth from the ventral wall of the foregut immediately posterior to the stomach: and that segmentally the nerve innervation of the stomach and liver is the same. The gastric nerves possess a lower threshold for stimuli to surmount than the nerves of the biliary tract, so that it is readily understood why symptoms of gall bladder disease are referred to the stomach.

As the patients only rarely come to the surgeon early for relief, a chronic inflammation develops, placing added strain on the liver cells. The result, as daily demonstrated in all the larger surgical clinics, is biliary cirrhosis, as revealed by an enlarged liver, thickening of the capsule, increased peri-portal fibrosis, and frequently marked fatty infiltration. The organ thus handicapped is not able to take up hemoglobin as well as formerly, and frequently also fails to store glycogen. The result of this is the comparatively high blood sugar so often seen in disease of the gall bladder.

Early operation for removal of a diseased gall bladder will diminish the number of cases of advanced biliary cirrhosis which the surgeon is meeting all too often today. Where the condition has progressed to this stage, removing the gall bladder and clearing the common duct of stones (which are usually present) and inserting a T-tube in the common duct will improve the drainage of the biliary tract and thus give the parenchymal cells a chance to regenerate and resume their function—but the fibrous cells will remain. A noteworthy fact in this connection is the rather frequent association of gall bladder disease and disease of the appendix.

THE STOMACH AND DUODENUM

Another common lesion of the upper digestive tract which the surgeon has to deal with is ulcer of the stomach or duodenum.

Of the two, gastric ulcer was formerly supposed to be the more frequent, but today it is generally recognized that duodenal ulcer occurs in proportions varying from two to one, to four to one of gastric ulcer. On the other hand, gastric ulcer is the more pernicious; not only does it tend to develop more rapidly, become more extensive, but it is less likely to become stationary and frequently is the precursor of carcinoma.

Although a vast amount of literature has accumulated on the subject the cause of ulcer formation is still not definitely known. It is also a fact that ulcers show a predilection for certain segments of the stomach. The majority of gastric ulcers occur on the lesser curvature near the pylorus. They are also more frequent in certain geographical localities than others. This is a well known fact. For example, it is said that in a small hamlet of eleven families in the Austrian Tyrol nine individuals carry scars from operation for ulcer.

Rost explains this by the fact that in the process of digestion, fluids and semisolids travel closely along the lesser curvature, and furthermore of the three muscular layers of the human stomach—an inner circular, middle oblique, and an outer longitudinal layer—the oblique fibres do not extend over the lesser curvature or portions of the adjoining and posterior wall.

Retzius describes a free space along the lesser curvature which is converted into a groove as the oblique fibres contract, and this contraction causes the cardia and pylorus to be brought closer together. Waldeyer has named this the "Magenstrasse" or gastric pathway. It has been estimated that 95 per cent. of all gastric ulcers occur in this pathway. Experimentally, produced ulcers of the fundus of the stomach tend to fibrose rapidly, whereas those along the lesser curvature very often form peptic ulcer. One possible starting point for an ulcer is a small erosion due to trauma or other repeated insult such as coarse food, rapidly ingested. Yano has shown that an erosion along the lesser curvature is not covered by a protective coat of mucus so that it is in constant contact with the normal acid gastric juice. Pathologically a peptic ulcer develops fairly rapidly in the early stages, and then becomes chronic. With this chronicity and slow but steady extension the danger of complications constantly increases.

Hyperacidity is often cited as a potent cause of ulcer, but the results of gastric analyses in these cases lack uniformity. Indeed, we are not certain that a true hyperacidity ever exists although hypersecretion is frequently present. But it suffices to say that hydrochloric acid in normal gastric concentration is not conducive to the repair of an ulcer once established.

The work of Rosenow appears to demonstrate a relationship between focal infection and the development of ulcer. He has succeeded in isolating 37 different strains of streptococci from the bases of different ulcers.

Monserrat maintains that alteration in gastric rhythm, if persistent, will initiate the formation

of an ulcer. He furthermore believes that gastric ulcer is found in a stomach characterized by hypotonia, pyloric spasm, and delayed emptying, while in the presence of a duodenal ulcer the gastric wall is hypertonic, the pylorus is patulous and a rapid emptying-time is the rule.

We cannot linger too long over the various possible exciting causes. Let us proceed to the symptomatology, recognition, and, finally, treatment of ulcer.

SYMPTOMATOLOGY

We know that ulcer usually occurs in males and ordinarily between the ages of 25 to 40 years. In the Lankenau Clinic four of every five patients coming to the operating table for ulcer are males. Barker gives an even proportion of one to one in his series of medically treated cases. There is a definite periodicity of attacks of pain in the epigastrium with a certain food relationship followed by intervals of freedom lasting from several weeks to a year or more. The patient may experience from one to four attacks in a year. Duodenal ulcer usually shows more regularity in the remission of symptoms than gastric ulcer. As the condition progresses the periodicity may be more regular and the intervals of freedom of shorter duration.

Not every ulcer, however, causes pain, and its presence is often suspected only when hemorrhage or rupture occurs.

The relation of the pain to the intake of food differs according to the site of the ulcer. For gastric ulcer the sequence is *food—pain—comfort* as a rule; while for duodenal ulcer it seems to be *pain—food—comfort pain*—"Hunger pain" suggests duodenal ulcer, whereas fear of food may be taken to indicate gastric ulcer. An ulcer near the cardiac orifice may excite pain immediately on taking food; if located on the lesser curvature the pain will occur within a half hour, while a pre-pyloric ulcer may not cause distress until an hour or two after eating.

The severity and character of the pain is variable. It may be knife-like, burning or boring, or it may occur as an aching, dragging, heavy distress. It is usually localized in the epigastrium and often is described as boring through to the back. Pain in the back may be indicative of pancreatic involvement. Acidity no doubt plays a role in its origin. Monserrat claims that the onset of pain occurs at the height of the acid secretion as determined by gastric analysis.

The pain of gastric ulcer may be relieved by vomiting, often self-induced; while that of a duodenal ulcer is more often relieved by food. If the lesion develops near the crus of the diaphragm the pain may radiate to the shoulder.

Loss of weight is suggestive of either ulcer or cancer. The gastric ulcer patient is usually lean; the duodenal ulcer patient may be overnourished; and if the lesion is located at the pylorus it may be impossible to differentiate an ulcer from a neoplasm.

Radiologically there is but one sign on which a diagnosis can be made with certainty. That is the visualized crater or niche, or, as Carman describes it, the accessory pocket.

Indirect evidence, such as retention, distortion, and fixation by adhesions, atonia and irregularities of peristalisis, signifies pathology although not necessarily ulcer.

Since there are such variations in the reports of x-ray study we use the information gained therefrom only as an accessory factor in diagnosis. To dismiss operative measures because the x-ray findings are negative, as practised by many surgeons, may mean the loss of opportunity and perhaps also of a life.

The recognition of the presence of an ulcer is based on the history and physical examination (although even this may be negative), and to some extent on laboratory findings. In many cases it is impossible to make a diagnosis of ulcer. We have often found the gall bladder to be the culprit, masking its wrong-doing by having stirred up the stomach. Many cases in which medical treatment for ulcer has been carried out for a year or more have finally sought relief in the operating theatre, and the intestinal tract was found to be normal and the gall bladder diseased. The internist advises operation only for cases which have not responded to medical treatment. We believe every case diagnosed as ulcer should be operated if possible.

The ideal operation for ulcer has not yet been performed. For large gastric ulcers a subtotal gastrectomy or a sleeve resection are at present the mode. If, in addition to the ulcer, a chronic gastritis is also present a subtotal gastrectomy is usually preferable to gastro-enterostomy since these cases frequently exhibit distressing sequelae if the anastomosis only is performed. For duodenal ulcer, especially of the bleeding type, simple excision, where possible, and posterior gastro-enterostomy is the operation of choice, even though posterior gastro-enterostomy still is followed by a certain percentage of marginal ulcers. It has been said that this unpleasant sequel is due to the action of the acid gastric juice, while some experimentalists state the ulcer is frequently found where the enterostomy clamps have been applied. Continental surgeons, notably Verebely, Finsterer, Haberer and others, are performing subtotal gastric resection on all ulcer cases irrespective of the site of the lesion. They believe that with removal of the acid producing portion of the gastric wall, recurrence or marginal ulcer will not take place. Nevertheless in the University Clinic in Frankfurt a marginal ulcer is reported to have occurred four times in one case following gastrectomy and

with each operation more of the organ until finally all of the stomach was removed, and still the patient returned with symptoms of another ulcer. So the story is not yet finished.

Finney's pyloroplasty when the duodenal ulcer is removable has the approval of many surgeons to commend it.

But undoubtedly the most satisfactory results, whatever the operation, will be obtained in those cases operated upon early before the process has become too extensive and in which attention to the after-care is maintained by coöperation between the surgeon and internist.

THE PANCREAS

The pancreas has a so-called external secretion which has an important part in digestion. Trypsin is a proteolytic enzyme converting insoluble proteins into the simpler forms; amylase acts on starch, causing hydrolysis; and lipase acts on the fats, splitting neutral fats to glycerin and fatty acids.

In addition to the external secretion, the internal secretion, a product of the islands of Langerhans, popularly known as insulin, is the dynamic factor necessary for glucose utilization.

Obstruction of the main pancreatic duct alone will not necessarily prevent the pancreatic secretion from reaching the duodenum, for its passage through the accessory duct of Santorini acts efficiently in approximately 75 per cent. of such cases, according to Hewlett. However, total occlusion may take place by a pancreatic stone or a large gall stone completely blocking the ampulla of Vater, cicatricial contraction of the ampulla, or a neoplasm exerting pressure.

Incomplete obstruction of the lower portion of the common duct, by increasing the fluid pressure within the duct, may cause a backflow of bile into the head of the pancreas. In this way a chronic pancreatitis may develop, the severiy of which depends upon the degree of interference with the normal function and blood supply of the organ. Patients suffering from such a condition give a history of chronic indigestion, loss of weight, due especially to marked interference with protein and fat digestion, and bulky, soft, fatty feces which contain fat and undigested meat fibres. The carbohydrate metabolism frequently suffers least of all, if the pathology present acts chiefly by obstructing the pancreatic ducts, since the internal secretion is then given off directly into the blood stream.

The most common affections involving the pancreas are chronic pancreatitis, acute pancreatitis which may be hemorrhagic, suppurative or gangrenous; abscess, cystic and calculous disease, and carcinoma of the head of the pancreas.

The onset of acute pancreatitis is described by various surgeons as the most agonizing of all abdominal pain. Vomiting, collapse, rapid, shallow respiration; rapid small pulse; low blood pressure, and prostration give the picture of a patient in extremis. The cause of this is, as a rule, due to activation of the powerful digestive ferments within the gland.

The only hope for relief is in immediate operation, walling off the pancreas as completely as possible, since the fermenting fluid will digest all tissues with which it comes in contact. Removal of the slough, proper drainage, and supportive measures are always indicated. Chronic pancreatitis is not only difficult to recognize, but even more difficult to treat effectively. The most effective treatment is surgical drainage either through a cholecystostomy, choledochostomy or a cholecystoduodenostomy. When the disease is in its incipient stage and is associated, as it most often is, with disease of the gall bladder, the proper surgery of the latter usually acts favorably on the former. But in its more advanced stage, the cholecystectomy is not advisable because the gall bladder is needed for the cholecystoduodenal anastomosis. While many of these cases do comparatively well, they are always menaced with the development of cancer of the pancreas, the ultimate result of which is usually a slow, lingering death.

THE SPLEEN

This organ, the largest lymphoid structure in the body, is frequently referred to as the graveyard for the blood.

In embryonic development the spleen is an important site for the formation of red blood cells, in this respect resembling the liver and peri-vascular tissues. As the body develops, the bone marrow gradually assumes the chief role in blood formation and the function of the spleen diminishes, but it continues to form lymphocytes and probably also blood platelets. Under certain conditions it may resume its earlier activity, for we know that in pernicious anemia, myelogenous leukemia, certain infections, and certain tumors affecting the marrow, the spleen may again take on its hemopoietic function. It may also act as a regulator for the production of erythrocytes by the bone marrow, since in certain conditions where the spleen has been removed, the bone marrow becomes hyperactive and the red cell count increases.

Probably the most important function of the adult spleen is the destruction of worn-out or abnormal erythrocytes and platelets by the recticulo-endothelial cells. When this function becomes accelerated, as in hemolytic jaundice, a secondary anemia is produced. After splenectomy the tendency to jaundice diminishes and the anemia thus improves. The spleen is also regarded as the regulator of iron metabolism,

freeing hemoglobin in the disintegration of erythrocytes. After the spleen is removed there is an increased excretion of iron.

Barcroft regards the spleen as a "bank and reservoir" from which, on demand, blood cells may be quickly released. Conditions like hemorrhage and vigorous exercise produce a state of deficient oxyhemoglobin of the blood, whereupon the spleen gives out corpuscles and itself temporarily diminishes in size.

Briefly stated, the spleen is said to produce antibodies; to act in some way, as yet not known, in the metabolism of cholesterol and unsaturated fatty acids, and to play some part in resistance to infection and also probably to tumor formation.

Dysfunction of the spleen may reveal itself clinically by enlargement of that viscus, anemia, and alteration of the blood platelet count; possibly also by cirrhosis of the liver, ascites, and other signs such as hemorrhage, jaundice, fever, etc. Therapeutically, removal of the spleen is advisable in Banti's disease, purpura hemorrhagica, hemolytic jaundice, certain cases of hepatic cirrhosis with splenomegaly, sometimes in pernicious anemia, wandering spleen, and for splenic cysts and tumors. It may not be amiss to state here that following splenectomy small accessory spleens, when present, tend to increase in size and function, and also that regeneration of the splenic tissue may take place after a number of years. This has been observed in adults coming to operation several years after splenectomy for traumatic injury to the spleen.

Splenic anemia, described by Banti in 1882, is characterized by enlargement of the spleen, progressive anemia, diminution of blood platelets, hemorrhage, cirrhosis of the liver, jaundice and ascites. For practical purposes we regard Banti's disease and splenic anemia as different stages of the same conditions. Many cases of Banti's disease show a thrombosis of the splenic vein.

Following splenectomy the platelets increase in number and remain high, the anemia diminishes and symptomatic improvement is rapid. Splenectomy with repeated transfusions is of value in purpura hemorrhagica, especially the thrombocytopenic type where the platelet count is usually quite low. Post-operatively there is noted a rapid increase in the platelet count, but the anemia may be slower in responding, and repeated transfusion may have to be used.

In cases of hemolytic jaundice the surgeon frequently meets a cirrhosis of the liver and also gall stones; therefore, no operation in this type of case is complete without thorough exploration of the right upper abdomen.

Various authors have noted improvement, symptomatically as well as in palpatory findings, in cases of cirrhosis of the liver following splenectomy. The hepatic cirrhosis probably develops from a toxin elaborated by the spleen and is slowly progressive until the cause, that is the mal-functioning spleen, is removed.

In the early stages of pernicious anemia splenectomy diminishes the rate of blood destruction and causes an improvement in the red count. We believe that in selected cases transfusion with splenectomy and a high purin, low fat diet offers the patient his best chance.

Cysts and tumors of the spleen are comparatively rare in our clinical experience. Echinococcus cysts have been frequently reported, and of the tumors, lymphosarcoma is, according to Smith and Rusk, the most commonly observed.

Briefly I have endeavored to review with you the modern interpretations of the more important disease entities of the upper abdomen. You have noted that many of the current views are as yet not firmly established and conflicting views are not uncommon.

We approach our problem in the light of present day knowledge with a considerable practical experience on which to base our judgment, hoping chiefly for the privilege of having patients in whom the process has not gone very far, in other words, the early stages of the disease, for early diagnosis of recent pathology with proper treatment promptly executed means a better chance of cure, and, vice versa, procrastination means disaster.

SUGGESTIONS FOR THE ADMINISTRATION OF THE MINOT AND MURPHY SPECIAL DIET FOR PERNICIOUS ANAEMIA

BY ELGIVA A. NICHOLLS

MINOT AND MURPHY[1] recently described the strikingly beneficial influence of a special diet rich in liver for patients with pernicious anaemia. In a later article[2] the same authors go into the details of the diet recommended giving a compend of the essentials deemed necessary.

A diet of liver for an indefinite period is sometimes an ordeal for patients and they need encouragement in beginning it. They may regard it with active dislike or even dread. If care is taken, particularly in the first few days, to choose liver dishes agreeable and suitable to the individual patient, this apprehension will subside and appetite will increase.

For the convenience of the physician who may prescribe this diet, and for others who are called upon to prepare it, the requirements as outlined by Minot and Murphy are here pre-

sented in a classified arrangement together with some details for their practical administration.

Table 1 shows at a glance the relative importance of the various foods concerned.

diet required in all instances and this table merely attempts to outline four which have proved satisfactory in the course of average cases. However, by simple adaptations it may meet complications arising.

TABLE 1

FOODS FOR PATIENTS WITH PERNICIOUS ANAEMIA

Mammalian Liver Essential: About 200 Grams (Cooked Weight) Daily

Encourage (in order of importance)	*Permit*	*Avoid*
1. Mammalian liver Calves', beef, pig from 90 to 240 gms. daily	One egg Milk (240 gms.) Tea ad lib. Coffee ad lib. Cocoa shells ad lib.	Fats not to exceed 70 gms. per day Butter Cream Cheese
2. Kidneys		
3. Chicken livers		Fat of meats Bacon Pork
4. Red muscle meat (trimmed of fat) (a) Beef (b) Lamb, mutton (c) Calves' heart, beef heart	Potatoes Macaroni Cereals Toasted whole wheat bread Simple crackers	Oils Cottonseed oil Olive in dressings, etc.
5. Fruits (fresh, canned or dried) (a) Peaches (b) Apricots (c) Oranges (d) Strawberries (e) Grapefruit (f) Pineapple (g) Blueberries (h) Raisins (steam until soft before serving) (i) Prunes (j) Other fresh fruit About 400 gms. per day	Sugar not to exceed 20 gms. per day Pickles Relishes Salt and vinegar Poultry Fish Shell fish	Nuts
6. Vegetables (cooked or raw) (a) Lettuce (b) Spinach (c) Asparagus (d) Cabbage (e) Tomatoes (f) Other vegetables containing from 1 to 10 per cent of carbohydrate.		

It is important to realize that relatively large amounts (200 grams cooked weight) of mammalian liver is the one essential food for these patients, but the foods in the "Encourage" list are much more desirable than others. Patients will be inclined to become slack on the quantities required and satisfy themselves with what they consider equivalents from the group of foods "Permitted." This list is merely supplementary and should never be considered a substitute.

Table 1, as it stands, does not present an appetizing diet, and in spite of the sample one-day's-menus in Minot and Murphy's second article, individual difficulties are likely to be encountered in the early stages of the treatment, which are perplexing to the physician whose experience in dietetics is limited. Personal likes and dislikes should be considered and given as much leeway as possible. With this in mind, four menus, adaptable to the needs of many patients, have been devised, and are contained in Table 2. It is impossible to formulate the exact

TABLE 2

SERIES OF DIETS*

No. I—*Liquids.*

Approximately 650 Calories; Liver = 90 Grams.

8 A. M.	Orange juice	120	
	Egg white	one	
	Coffee with milk	60	
10 A. M.	Liver pulp	30	
	in orange juice	240	
12 P. M.	Liver milk soup	30	liver
	Strained spinach or tomato juice	60	
2 P. M.	Cereal gruel with milk	60 90	
4 P. M.	Tea with milk	60	
6 P. M.	Liver pulp in orange juice	30 120	liver
	Strained fruit	60	
8 P. M.	Fruit juice	240	
	Egg white	one	
10 P. M.	Cereal gruel with milk	60 90	cooked cereal

No. II—*For the weak appetite.*

Approximately 1000 Calories; Liver = 120 Grams.

8 A. M.	Orange juice	120	
	Egg	one	
	Toast	15	
	Butter	5	
	Coffee with milk	60	
10 A. M.	Calves' or beef liver sandwiches	30	liver, bread 15
	Butter	5	
	Dill pickle	one	
1 P. M.	Minced calves' or beef liver	60	
	with macaroni	60	
	with butter	5	
	Strained spinach	60	
	Peach	one	
4 P. M.	Tea with milk	60	
	Soda crackers	two	
	Raisins	30	
6 P. M.	Tomato bouillon	120	
	Jellied liver in aspic	30	
	Blueberry and rice pudding	fruit 60,	rice 60, milk 30
8 P. M.	Scraped beef sandwiches	30	beef
	on graham bread	15	
	with butter	5	
	or Orange and grapefruit salad	150	mixed fruit
10 P. M.	Gruel with milk	120	

No. III—*For the increasing appetite.*

1200 plus Calories; Liver = 180 Grams.

8 A. M.	Grapefruit	one-half	
	Lamb chop (*no fat*)	one	
	Toast	30	
	Butter	10	
	Coffee with milk	120	
10 A. M.	Scraped raw beef sandwiches	30	beef
	Butter	5	
	Dill pickle	one	
1 P. M.	Green peppers stuffed with calves' liver	90	liver
	Beef steak	60	
	Steamed rice	60	
	Sliced tomatoes	90	
	Stewed apricots	60	
4 P. M.	Tea with milk	60	
	Soda crackers	two	
	Raisins	30	
6 P. M.	Beef broth	180	
	Baked potatoes stuffed with liver	100 90	liver
	Pineapple and orange salad	200	mixed fruit
	Fruit jelly	60	
10 P. M.	Fruit	one	serving
	or scraped beef sandwiches	30	beef

No. IV—*For the established appetite.*

Approximately 2000 Calories; Liver = 240 Grams.

8 A. M.	Blueberries	240	
	Cooked cereal with raisins	120 60	
	Two lamb chops *or* broiled kidneys	80	
	Toast	25	
	Butter	10	
	Coffee with milk	30	
10 A. M.	Scraped raw beef sandwiches	15	bread, 15 beef
	Dill pickle	one	
	Butter	5	
1 P. M.	Liver and kidney pie	80	liver, 60 kidney
	Roast sirloin of beef	90	
	Baked potato	120	
	Cole slaw With mineral oil dressing as desired	100	
	Peach	240	
4 P. M.	Strawberry and pineapple salad	150	mixed fruit
	Raisins	90	
6 P. M.	Spinach soup	90	spinach, 30 milk
	Liver club sandwich	30	bread, 80 liver, 200 tomato and lettuce with mineral oil dressing as desired
	Apricots	240	
10 P. M.	Liver in aspic jelly	80	liver

*The amounts are expressed in grams unless otherwise indicated.

Minot and Murphy[2] have commented upon the order in which the diet should be increased: "The food must be as palatable and as attractive as possible. The art of fine cooking and serving combined with persuasion will be necessary often to get the patient to eat the food desired." This task of the preparation of the diet may rest with the dietitian, the private cook or the patient himself. To facilitate this work, Table 3 has been designed; the purpose being to give as briefly as possible some ways of disguising liver to appeal to fastidious appetites. Details of preparation for each individual dish would require a book, so for present purposes only suggestions for dishes are outlined.

Considerable importance has recently been attached by Drs. Minot and Murphy[3] to calves' or beef liver pulp which appears in the first diet of Table 2. This is raw liver chopped as finely as possible in a meat grinder and strained through a fine sieve or muslin. It is then diluted with water to suit the given patient, or if he prefers, diluted with orange or lemon juice and served cold. Some like it mixed with bouillon and served warm. The preparations of raw liver may be taken as drinks between meals. Patients will frequently take it in this form in preference to cooked dishes, as they often consider it more in the nature of medication than nourishment. Furthermore, they may prefer the raw liver because they can swallow the required daily amount with less difficulty and more quickly than when it is in cooked form. The disadvantages are its difficulty of preparation on a small scale and its monotony. Also there arises the possibility of the occurrence of parasites.

TABLE 3

Two hundred grams (6 ounces) of cooked liver is a day's ration. One calves' liver (uncooked) weighs from 2 to 3 pounds. It will lose about 40 per cent of its weight in preparation.

I. Broil slices of calves' or beef liver.
Do not soak in water first.
(Steam chicken livers.)

II. Remove veins and prepare as one of the following:
A. Chop in small pieces.
B. Mince coarsely.
C. Mince finely and strain.

III. Season with salt and a pinch of sugar.
Moisten with gravy from roast meat, or with broth from boiled meat or fowl.
Additional distinctive seasonings are:
Curry, chop suey sauce, Worcester sauce, tomato purée with chili sauce, celery salt, onion salt, piccalilli, sherry.

With A, B or C flavored to taste, the following may be prepared.

HOT DISHES

Pie, Cornish pasty or turnover of A or B plus cooked vegetables, covered with or enclosed in a plain pastry crust.
Shepherds pie of B or C covered with mashed potato and browned in the oven.
Stuffed vegetables. Tomatoes, green or sweet red peppers, baked potatoes, etc., stuffed with B or C.
Indian curry of B or C with raisins and boiled rice.
Timbale. A mould lined with boiled rice or macaroni and stuffed with B or C. Steam, invert, and serve with additional gravy.
Soup. C with addition of chicken or meat broth or milk. To vary add strained tomatoes and chili sauce or boiled rice.
Stew. A or B plus cooked carrots, onion, potatoes, leeks, served en casserole (improved with sherry).

COLD DISHES

Liver in aspic. A, B or C set in jellied meat broth or clear aspic jelly.
Liver cream. C set in milk plus gelatine.
Tomato salad. Tomatoes stuffed with C and garnished.
Stuffed egg salad. Hard boiled egg whites stuffed with C.
Sandwiches. B or C on toasted white or graham bread, or crackers.
Club sandwich. B or C on toast with lettuce, tomato, mineral oil dressing, and thin slice of lean boiled ham.

The scheme given in Table 3 is designed for those who are familiar with the first principles of cookery. Special knowledge is not required to follow it. The cook may use her imagination and invent new dishes to suit her patient's taste, always bearing the point in mind that fats best be restricted, thus eliminating food fried or sautéed. She will also observe that there is apt to be a demand for acid, sharp tasting dishes.

Since so many patients undertake this diet in a critical frame of mind, undecided and apprehensive, persuasion and encouragement form a large part of the early treatment. With the cook, whose duty it is to establish and maintain appetite as speedily as possible, rests a big reponsibility.

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THE USE AND ACTION OF O-IODOXY BENZOIC ACID IN THE TREATMENT OF ARTHRITIS

BY MILLARD SMITH, M.D.

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FOR the past three years, at the University of Michigan, Young and Youmans[1] have been using o-iodoxy benzoic acid intravenously in the treatment of arthritis, and recently they have reported their results in a series of forty-three patients.

Of the forty-three patients, including gonorrhoeal, acute, hypertrophic and atrophic types of arthritis, according to the classification of Young and Youmans, twenty-four, or 56 percent, were markedly improved, ten, or 23 percent, moderatedly improved, six, or 14 percent, slightly improved, and three, or 7 percent, showed no improvement. These patients had received other recognized forms of treatment with little permanent benefit. Some of them were hopeless cripples. A drug, the use of which has been accompanied by such uniform and striking results, deserves thorough trial and study. In the series of cases to be reported here no less striking benefits have been obtained, and while it is too early to report on end results, the immediate effects of the drug which have been obtained are of sufficient interest and importance to warrant separate consideration.

METHOD OF ADMINISTRATION

The drug is used in the form of the sodium or ammonium salt, either of which is highly soluble in distilled water. For intravenous use an aqueous solution of one percent concentration is preferable and two percent concentration should not be exceeded. The solution should be at body temperature and before injection should not be boiled for purposes of sterilization. It should be made up within two hours of the time of injection. Injection is made slowly into the cubital vein, seven to fifteen minutes being re-

quired for a one gram dose. As a first dose it is best not to exceed 0.5 grams on account of the possibility of unexpected severe reactions. As much as 1.5 grams have been given intravenously in one dose without untoward effect, but the usual therapeutic amount is one gram. The doses may be repeated every other day indefinitely without apparent harm. The patient's symptoms, degree of progress, and severity of reaction should govern the frequency and size of dosage. Some patients may be carried along quite satisfactory with one dose a week, while others do well with a combination of occasional intravenous doses and frequent oral administration. Oral administration will be quite sufficient in others. There seem to be a few patients who receive benefit only from intravenous injections. It is possible that daily amounts of three to four grams divided into 1.0 gram doses by mouth may supplant the intravenous administration in this latter group.

By mouth the drug may be given in two to three percent solution, in pill or capsule form. It should be given on empty stomach with two glasses of water. The first dose is usually one gram and after that one and one-half grams. This may be repeated every day or less frequently. It has been given as a rule every other day. The drug is effective and well tolerated in two percent aqueous solution when administered by rectum. The drug, even in powder form, should be kept from the light, as sunlight will turn it from a white to brown color indicating a splitting off of iodine. The salts of the free acid are not affected by sunlight. For oral and rectal administration it is convenient to dissolve the free acid by adding an excess of sodium bicarbonate.

REACTION TO THE DRUG

(a) Intravenous injections. One might gain the impression from reading the paper of Young and Youmans that the reaction to be expected may be uncomfortable but that it is not distressing. Experience with this series indicates that the reaction is very severe in nearly every patient. The patient may complain of an intense pain along the course of the vein even during the injection of the first ten cubic centimeters. When this occurs the injection should be stopped until the pain ceases. This may need to be repeated several times. Massage over the vein will hasten the relief from pain. The same patient may not experience pain at every injection and some patients never experience this sensation. After ten to forty cubic centimeters have been injected the patient complains of dryness of the mouth and then of a smarting similar to that produced by red pepper. This smarting spreads to the nose, eyes, skin of face and sometimes the whole body. It is usually very severe and there is profuse perspiration. A few patients complain of a sense of substernal oppression which may be very distressing and terrifying. Most patients have a severe burning in the epigastrium with gastric cramps, nausea and vomiting. Severe retching without emesis occurs frequently. A burning headache may develop. These severe symptoms, in toto or in part, last for from one to ten minutes and then there is more or less complete relief with a feeling of exhaustion. During the reaction the patient often becomes somewhat hysterical and thrashes about in bed. For several hours after the injection a slight burning or tingling in the affected joints may be experienced, but this is not uncomfortable and is often very encouraging to the patient. Several patients have refused to take any more of the drug on account of the reaction, but the majority have been willing to have repeated doses on account of the definite relief which is obtained. The rate of the injection, provided not more than ten minutes is consumed, does not seem to affect the severity of the reaction. Usually the more rapidly the drug is injected the less prolonged the reaction will be, and from this standpoint rapid injections would seem to be desirable.

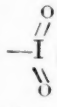
Partial or complete thrombosis of the vein has been observed in several cases. This has not borne any relation to the symptom of pain along the vein during injection. The rate of injection plays a very important part in causing the thrombosis and for this reason the solution should be given as slowly as possible; otherwise it would be more desirable to give it rapidly. In one patient the thrombosis was so complete that there was slight edema of the forearm with an appearance suggesting a lymphangitis. With the application of ice bags this subsided entirely, and the same vein was used again for injection several weeks later. As Young and Youmans pointed out, there is an individual susceptibility to thrombosis. Several patients received 1.5 gram doses in two percent solution without even thickening of the vein after repeated injections. In several instances the drug was accidentally injected in small amount outside the vein. This caused moderate burning and a slight inflammatory reaction of short duration. When this occurs the tissues in this region should be vigorously massaged after the needle is withdrawn in order to spread the drug about as much as possible.

In only a few instances has a chill and fever followed the injections. This has borne no relation to the patient's temperature at the time of the injection, occurring in patients both febrile and afebrile. A few have complained of a chilly sensation without any real chill. If a chill occurs it may be expected within thirty minutes after the injection.

(b) *Rectal and Oral Administration.* These two methods were tried in one patient (number

24, Table I) after every available vein had become thrombosed. Since then oral administration has always been tried before resorting to intravenous injections. The reactions are very slight and hardly uncomfortable. With administration of the drug by mouth or rectum there may be a slight sensation of abdominal heaviness lasting for one-half to two hours. One or two patients have experienced very slight smarting in the mucous membranes or eyes. Many have noticed the smarting in the affected joints similar to that felt with intravenous administration. Most of the patients have profuse sweating beginning about one hour after ingestion of the drug and lasting two or three hours. Some have said that the drug made them drowsy as if they had had morphine. There seems to be no local irritant effect upon the intestinal mucosa. The free acid has been given in capsules in 1.5 gram doses without any uncomfortable gastric symptoms. It seems to have a more pronounced action on joint symptoms when given in solution than in powdered form in capsules.

The action of O-Iodoxy Benzoic Acid. Over a period of twenty-seven years this compound has been known pharmacologically although Young and Youmans have been first to apply it clinically. These authors give a complete bibliography of pharmacological studies by other workers. In considering the action of the drug it is of interest to note the close structural similarity of o-iodoxy benzoic acid to that of salicylic acid, the latter being o-hydroxy benzoic acid. In o-iodoxy benzoic acid the hydroxyl group of salicylic acid has been replaced by



a —I group.

Young and Youmans introduced the drug in the treatment of arthritis because it had been shown to be a strong antiseptic, and when injected intravenously caused a nonspecific stimulation of antibody formation in animals. They felt it was reasonable to suppose that it might aid in combating the infectious element in arthritis. Without entering into a discussion of the etiology of arthritis it is sufficient to state that the results obtained have been far too rapid to be accounted for on the basis of antibody formation. As observed in this series of cases the drug appears to have three main actions; analgesic, relief of muscle spasm, and reduction of swelling.

Analgesia. This is very prompt, coming on usually within ten minutes after injection and lasting for twenty-four to forty-eight hours. It may be so profound that joints which were exceedingly tender and painful for many hours become entirely relieved.

Relief of Muscle Spasm. This action may be immediate but is more apt to make its appearance in six to twelve hours. It is difficult to evaluate because restriction of motion may be due also to pain. A man with acute arthritis (patient number 12, Table I) who had been unable to extend his knees completely for one month was able to extend his knees fully within three hours of an intravenous injection. Another patient (number 15) with a rigid and quiescent knee joint developed five degrees of motion twelve hours after an intravenous injection.

Reduction of Swelling. In patient number 15 a generalized edema of the leg was reduced with as small a dose as 0.2 grams intravenously. Patient number 13 with a non-pitting and extensive edema of the hand showed marked pitting within fifteen minutes after an intravenous injection. Effusion into the joints often subsides rapidly after the first intravenous injection.

The close structural similarity of the drug to the salicylates has been pointed out and the clinical action of the drug resembles very much that of salicylates excepting that o-iodoxy benzoic acid has many times the potency possessed by the salicylates. Hanzlik[2] has shown that salicylates increase the permeability of loops of intestine for solutes. He argues that by increasing the permeability of cell membranes salicylates are able to reduce edema.

The similarity of action and structure of this drug to salicylates with its marked difference in potency, suggests that other reactive derivatives of the salicylates may exist which might be used with equal beneficial results and which may produce less severe reaction intravenously.

Another point which the action of the drug would indicate is that it should be useful in any form of arthritis where pain, swelling or muscle spasm exists. These symptoms and signs should be the indication for the drug rather than the type of arthritis.

CLINICAL RESULTS

The results to be reported have been obtained in a series of thirty-three patients (Table I), the group having received over one hundred intravenous and over fifty rectal or mouth doses of the drug. The cases are distributed by diagnosis into the following groups: arthralgia, two; acute arthritis, twelve; chronic arthritis, sixteen; gonorrhoeal arthritis, two; acute rheumatic fever, one. The patients with arthralgia complained of pain and stiffness but on physical examination showed no swelling, local heat, increase in body temperature, or increased white blood count. Those cases classified as acute arthritis exhibited local joint changes of an acute nature and comparatively short duration, some with an increase in body temperature and elevated white blood count. All patients classified as chronic arthritis had had the disease for over

six months, and one case had a duration of twelve years. Most of them had varying degrees of joint destruction and deformities. These patients were not having acute exacerbations and their symptoms seemed to be due to changes of the weather and to the results of joint destruction. No hypertrophic (degenerative) types were included in this series. The two patients with gonorrhoeal arthritis had positive urethral discharges. The case of acute rheumatic fever was given only one intravenous injection in order to study the immediate effect upon the joint symptoms.

Of the two patients with arthralgia, one (number 1) received a single intravenous injection of one gram of the drug followed by complete and immediate relief from a generalized joint affection which has kept the patient in bed for two weeks in spite of large doses of salicylates. This was followed one week later by an operation on the nose which was the seat of a chronic infectious process. The relief remained permanent for six months. The other patient (number 2) received three one and one-half gram doses of the drug by mouth with complete relief of symptoms for one month. She now has a slight recurrence of symptoms.

Out of twelve acute joint cases all but one (patient number 9) obtained marked relief from pain, stiffness and swelling from each dose of the drug. Only two, however, show no recurrences. One of these (patient number 5) had very acute joints with septic temperature during the course of scarlet fever. After two intravenous injections the joint signs and symptoms entirely subsided and there has been no recurrence in five months. The second patient (number 8) had an acute arthritis of the ankle and knee on the same side with an acute osteomyelitis of the femur. One injection of the drug, in addition to relieving the arthritic pain, entirely abolished the acute pain of the osteomyelitis for a period of five hours. After operation the knee became septic but there was no return of the arthritic symptoms in the ankle. Two of the patients (numbers 4 and 6) of this group, who were temporarily benefitted by the drug, have had foci of infection removed and there has been little or no recurrence of symptoms. One patient (number 10) has been entirely relived from recurrences by high colonic irrigations. In this patient it is of interest to compare the action of the drug with that of high colonic irrigations. Within a period of six weeks the patient had four severe attacks of generalized acute arthritis with short periods of complete joint relief between each attack. During the first attack one dose of o-iodoxy benzoic acid, within a very short time, markedly relieved pain, edema and muscle spasm. The recovery from the first attack seemed to be brought about entirely by the drug. The second attack was treated only with salicylates as was also the third. During the fourth attack the patient asked for the drug and it was to have been given by rectum. When the tube was inserted, a large amount of rectal contents of highly putrefactive character was expelled through the tube. A high colonic irrigation was ordered and four hours after being given, the swelling of the joints had entirely subsided and pain was entirely gone.

One patient (number 9) with acute arthritis received repeated intravenous doses of the drug, the last two being one and one-half grams, with only fleeting relief. With removal of her tonsils, which showed a pure culture of streptococcus hemolyticus, and rest at the seashore she is making a slow convalescence from her joint symptoms. Another of the patients having acute arthritis (patient number 12) who received marked relief from pain, swelling and muscle spasm, reached a point where further injections of the drug gave no relief and sometimes were followed by an increase in the severity of the joint symptoms. He received 1.5 gram doses of the drug orally for several weeks and showed no further improvement. The drug was omitted and the patient is now receiving muscle massage with marked improvement in arthritic signs and symptoms.

In general, the drug has given relief to pain, swelling and muscle spasm in all but one of the cases with acute arthritis. The results in this group, however, indicate the importance of removing foci of infection, special care of the gastro-intestinal tract, and the observance of other well known measures in the treatment of arthritis.

In the patients with chronic arthritis, three (numbers 16, 26 and 30) received no relief from the drug. Patient number 16 experienced distressing symptoms from very small amounts of salicylates. She was also sensitive to o-iodoxy benzoic acid so that only small amounts could be given. She had a generalized edema of one leg which disappeared after as small a dose as 0.2 grams of the drug intravenously. Her tolerance, without prolonged symptoms of salicylism, was exceeded at 0.3 grams. She received several intravenous injections in doses up to 1.0 grams, without any relief to muscle spasm, or joint pain. The second patient (number 26) who received no benefit has since developed a severe and persistent urticaria. In the third patient (number 30) the drug was hardly given a fair trial. She received only two rectal injections and obtained no relief whatsoever. Two patients (numbers 21 and 22) of the group of sixteen received two and five intravenous injections respectively, with moderate benefit, and after the drug had been omitted (they refused to take more on account of the severity of the reactions) improved markedly. In another patient (number 15) the process was entirely quiescent and the knee joint was absolutely rigid

Patient No.	Type of Arthritis	Sex	Age	Duration of Disease	Constipated.	Foci of Infection	Joints Involved.	Joint Destruction.	Anxylosis	Swelling	Pain	Muscle Spasm.	Number of 0-iodoxy re	
													Intravenous.	F
1	Arthralgia	F	21	2wks.	no	Nasal polyps removed one week after drug given.	Spine, fingers, wrists, elbows, shoulders, hips, knees, ankles, feet.	no	no	no	severe on motion	slight	1	
2	Arthralgia	F	21	2mos.	slightly	none, onset after rubella. Tonsils removed 9yrs. ago.	Hands, feet, knees hips.	no	no	slight	varies with weather	slight		
3	Acute	F	59	2wks.	no	no	Hand, wrists, elbows, knees, ankles.	no	no	moderate	severe	moderate	2	
4	Acute	F	18	2wks.	no	came on with grippe. Two abscessed teeth removed.	Ankles, wrists.	no	no	slight	moderate	moderate	2	
5	Acute	F	19	5days	no	onset during acute stage of scarlet fever.	Wrists, hands, elbows, knees, ankles.	no	no	marked	severe	severe	2	
6	Acute	F	20	6mos.	no	Tonsils removed. Culture = strep. hem.	right shoulder, knee and ankle.	no	no	slight	moderate	slight	2	
7	Acute	F	21	1mo.	no	four abscessed teeth removed.	left ankle and knee, right hip, both wrists	no	no	slight	moderate	slight	1	
8	Acute	M	24	2wks.	no	onset with acute osteomyelitis of femur. "	knee and ankle same side as osteo.	no	no	moderate	very severe	moderate	1	
9	Acute	F	19	6mos.	no	Tonsils removed. Culture = strep. hem. Onset after immunization for scarlet fever and diphtheria.	ankles, toes, knees, wrists, fingers, elbows.	no	no	slight	slight to moderate	slight	8	
10	Acute	M	33	2wks.	very	one abscessed tooth G.I. Tract.	hands, wrists, elbows, shoulders, sterno-clavicular, mandibulars, spine, knees, hips.	no	no	marked	very severe	severe	6	
11	Acute	M	30	3wks.	no	two abscessed teeth removed.	wrists, ankles.	no	no	moderate	moderate	moderate	6	
12	Acute	M	31	8wks.	moderate	?G.I. Tract. Tonsils absent.	wrists, fingers, elbows, shoulders, spine, knees, ankles.	no	no	marked	severe	marked	13	
13	Acute	M	36	2wks.	no	no	wrists, ankles	no	no	marked	severe	marked	12	
14	Acute	F	55	1wk.	no	no	wrists, elbows, shoulders, knees.	no	no	moderate	severe	marked	3	
15	Chronic	F	40	3yrs.	slight	Tonsils and teeth removed 3yrs. ago	rt. shoulder and elbow and ankle. both knees.	marked in knees and ankle, slight in shoulder and elbow.	marked	no	slight on motion	marked	11	
16	Chronic	F	28	3yrs.	slight	tonsils removed 3yrs. ago; also several teeth.	rt. hip, knee and ankle.	moderate	moderate	general edema rt. leg	severe	marked	5	
17	Chronic	F	50	7mos.	slight	no	lumbar spine	slight	no	no	severe sciatic	marked	2	
18	Chronic	M	55	12yrs.	moderate	no	Shoulders, elbows, hands, feet.	marked	slight	slight	moderate	marked	15	
19	Chronic	M	53	6mos.	slight	two abscessed teeth removed. ?G.I. Tract. patient has P.A.	hands, shoulders, knees.	no	no	slight	moderate	slight	2	
20	Chronic	F	58	6yrs.	slight	no	hands, knees.	no	no	no	moderate	slight	2	
21	Chronic	F	35	8mos.	no	chronic tonsillitis tonsillectomy	hands, shoulders, hips, knees, feet	no	no	slight	moderate	moderate	2	
22	Chronic	F	35	4mos.	no	several abscessed teeth removed	hands, elbows, knees, ankles.	moderate	moderate	no	moderate on movement	moderate	5	
23	Chronic	M	34	7yrs.	no	onset with typhoid fever, no foci.	hands, elbows, shoulders, knees.	slight	no	no	moderate	moderate	2	
24	Chronic	F	42	2yrs.	slight	tonsils removed 2yrs. ago; several carious teeth not removed.	hands, wrists, elbows, shoulders, mandibulars, spine, hips, knees, ankles, feet.	marked	only in fingers	moderate in feet	severe on movement	marked	9	
25	Chronic	F	46	1yr.	no	no	cervical spine, knees, shoulders, hands.	no	no	no	severe	slight	2	
26	Chronic	F	40	6yrs.	very	several nose and sinus operations 3yrs. ago. ?G.I. tract.	knees, fingers	slight	no	no	moderate on motion	slight	6	
27	Chronic	M	65	2yrs	slight	no	fingers, shoulders, knees	no	no	no	severe	slight	6	
28	Chronic	M	28	2yrs.	no	Tonsils removed after 2mos of drug treatment. Culture = strep. hem.	knees, feet, cervical spine, shoulders.	no	no	moderate	moderate on motion	marked	17	
29	Chronic	M	57	3yrs.	no	no	hands, shoulders, knees, feet.	no	no	slight	moderate depending on weather	slight	8	
30	Chronic	F	42	2yrs.	no	no	hands. shoulders, knees.	no	no	slight	severe	moderate		
31	Gonorrheal	M	30	5days.	no	urethritis (G.C.)	knees	no	no	moderate	moderate	slight	3	
32	Gonorrheal	F	41	1wk.	no	urethritis (G.C.)	knees	no	no	marked	severe	marked		
33	Acute Rheu. Fever	F	17	1wk	no	?tonsils	wrists, elbows	no	no	marked	severe	marked	1	

Joints Involved.	Joint Destruction.	Anxylosis	Swelling	Pain	Muscle Spasm.	Number of doses of o-iodoxy benzoic acid received.		
						Intravenous.	Rectal	Mouth
Spine, fingers wrists elbows, shoulders, hips, knees, ankles, feet.	no	no	no	severe on motion	slight	1		
Hands, feet, knees hips.	no	no	slight	varies with weather	slight			3
Hand, wrists elbows, knees, ankles.	no	no	moderate	severe	moderate	2		
Ankles, wrists.	no	no	slight	moderate	moderate	2		
Wrists, hands, elbows, knees, ankles.	no	no	marked	severe	severe	2		
right shoulder, knee and ankle.	no	no	slight	moderate	slight	2	1	
left ankle and knee right hip, both wrists	no	no	slight	moderate	slight	1		
knee and ankle same side as osteo.	no	no	moderate	very severe	moderate	1		
ankles, toes, knees, wrists, fingers, elbows.	no	no	slight	slight to moderate	slight	8	3	
hands, wrists, elbows, shoulders, sterno-clavicular, mandibulars, spine, knees, hips.	no	no	marked	very severe	severe	6	1	
wrists, ankles.	no	no	moderate	moderate	moderate	6		
wrists, fingers, elbows, shoulders, spine, knees, ankles.	no	no	marked	severe	marked	13	8	10
wrists, ankles	no	no	marked	severe	marked	12	3	
Wrists, elbows, shoulders, knees.	no	no	moderate	severe	marked	3		
rt. shoulder and elbow and ankle. both knees.	marked in knees and ankle, slight in shoulder and elbow.	marked	no	slight on motion	marked	11	12	
rt. hip, knee and ankle.	moderate	moderate	general edema rt. leg	severe	marked	5		
lumbar spine	slight	no	no	severe sciatic	marked	2		
Shoulders, elbows, hands, feet.	marked	slight	slight	moderate	marked	15		16
hands, shoulders, knees.	no	no	slight	moderate	slight	2		
hands, knees.	no	no	no	moderate	slight	2		
hands, shoulders, hips, knees, feet	no	no	slight	moderate	moderate	2		
hands, elbows, knees, ankles.	moderate	moderate	no	moderate on movement	moderate	5		
hands, elbows, shoulders, knees	slight	no	no	moderate	moderate	2		
hands, wrists, elbows, shoulders, mandibulars, spine, hips, knees, ankles, feet.	marked	only in fingers	moderate in feet	severe on movement	marked	9	10	19
cervical spine, knees, shoulders, hands.	no	no	no	severe	slight	2	2	
knees, fingers	slight	no	no	moderate on motion	slight	6	4	
fingers, shoulders, knees	no	no	no	severe	slight	6	10	12
knees, feet, cervical spine, shoulders.	no	no	moderate	moderate on motion	marked	17	8	4
hands, shoulders, knees, feet.	no	no	slight	moderate depending on weather	slight	8		6
hands. shoulders, knees.	no	no	slight	severe	moderate		2	
knees	no	no	moderate	moderate	slight	3		
knees	no	no	marked	severe	marked		2	
wrists, elbows	no	no	marked	severe	marked	1		

doses of benzoic acid received.		Total grams received	Duration of treatment	Relief to:-			Recurrence of symptoms.
ectal	Mouth			Swelling	Pain	Muscle spasm	
		1.0	1 day		complete	complete	none after six months.
	3	4.5	1 wk.	complete	complete	complete	yes, after 1 month.
		2.0	3 days.	complete	complete	complete	yes, 2 mos. later.
		2.0	1 mo.	complete	complete	complete	slight with bad weather.
		2.0	3 days.	complete	complete	complete	none after 5 mos.
1		2.5	2 mos.	complete	complete	complete	none after last dose and tonsillectomy 3 mos. ago.
		0.8	1 day.	complete	complete	complete	moderate with bad weather.
		1.0	1 day.	complete	complete	complete	only in knee where purulent synovitis developed.
3		14.0	2½ mos.	very slight	very slight	slight	frequent; very little benefit from drug.
1		7.7	2 mos.	moderate	almost complete	moderate	three recurrences, last one completely relieved in 3½ hrs with high colonic irrigation.
		5.5	1 mo.	almost complete	complete	moderate	recurrence 2 days after each dose! Patient left hospital against advice; has not been heard from.
8	10	45.0	5 mos.	marked	almost complete	marked	process continues. patient now chronic with some joint destruction in wrists.
3		15.0	3 mos.	marked	complete	marked	moderate degree destruction now present; acute process subsided.
		3.0	1 wk.	complete	complete	complete	patient discharged 2 mos. ago and not heard from.
12		29.0	3 mos.		complete	complete	patient discharged to surgeons for arthroplasty.
		2.6	1 mo.	complete	no	no	pt. sensitive to salicylates and o-iodoxy-benzoic acid; treatment discontinued
		2.0	3 days		complete	complete	none in 5 mos
	16	43.1	5½ mos.	complete	complete	complete	pt. shows return of symptoms with each omission of drug; joint destruction caduses considerable disability.
		2.0	3 wks.	complete	complete	complete	one month after last dose; also developed urticaria during last recurrence.
		2.3	3 days		complete	complete	none after 5 mos.
		2.3	3 days	complete	nearly complete	nearly complete	pt. continued to improve and 5 mos. later very much better.
		5.0	3 wks.		nearly complete	moderate	pt. improved steadily after last dose of drug and has no recurrences in past 5 months.
		1.8	5 days		complete	moderate	refused more treatment, no improvement at end of 4 mos
0	19	58.0	4½ mos.	marked	marked	marked	pt. a hopeless cripple is slowly but markedly improving
2		3.2	1 mo.		complete	complete	one month later as bad as before.
4		10.4	1 mo.		no	no	no better 4 mos later.
0	12	25.5	4 mos.		marked	marked	pt. in bed 2 yrs.; now standing on feet and pushing chair about.
8	4	39.6	5 mos.	marked	marked	marked	pt. continues to improve slowly
	6	19.0	3 mos.		marked	marked	recurrence when drug omitted; no better 1 mo. after treatment.
2		2.5		no	no	no	pt. discouraged and did not come back
		3.0	10 days	moderate	complete	complete	slight of swelling
2		3.0	3 days.	no	slight	no	no after 3 mos.
		0.5	1 day.	marked	complete	marked	no after 2 mos

to mechanical force. The morning after the first injection the knee showed about five degrees of voluntary motion. With repeated intravenous doses and forcible passive and active motion about fifteen degrees of motion were obtained. The patient finally was turned over to the surgeons for an arthroplasty. One patient (number 17) of this group complained of severe and crippling sciatic pain. An x-ray of the spine demonstrated an atrophic process in the lumbar spine. One injection of the drug entirely relieved the severe symptoms and permitted the patient to go about her usual housework which she had not been able to do for several months. A second injection was given and there has been no recurrence of the pain over a period of five months. Another patient (number 27), a man of 65 with almost constant pain in the joints of his knees, hands and shoulder, whose joints showed no changes in x-ray plates, and who had not been able to stand on his feet for two years, is now able to stand on his feet and push a chair about the room after six intravenous injections, ten rectal injections and twelve doses of the drug by mouth. He is practically free from pain.

Patient number 18 was so crippled that he had not been able to lift a glass of water to his mouth with his left hand for ten years. After six intravenous injections he was able to do so with ease. The metacarpal-phalangeal joints of both hands showed marked destruction by x-ray and before treatment was begun he was unable to close either fist completely. After the six injections, in spite of the joint destruction, he could close both fists firmly. Both elbows showed a marked degree of contracture which has been entirely relieved with no other form of treatment.

Another patient (number 24) a woman of 42 years, had been in bed for eighteen months with a slowly progressing destructive form of arthritis, unable to feed herself or to move without acute pain and with marked contractures and deformities. She received nine intravenous injections, ten rectal injections, and nineteen doses by mouth and is now sitting in a chair, moves her joints with very little pain, shows better joint control, has less muscle spasm, can brush her teeth, feed herself and write letters. By massage her contractures have been greatly reduced. Before treatment was begun her skin was glistening, dry and thin. Her finger nails were exceedingly brittle. Now her skin has a normal texture and her finger nails are soft. Mentally she has been transformed from an irritable, complaining and discouraged individual to one who is happy and optimistic. Her improvement has been as good on oral doses of the drug as on intravenous ones.

This group of patients with chronic arthritis, while it shows a few failures and a fairly large percentage of partial benefits from the drug, demonstrates that chronicity or degree of deformity is no contraindication for a trial of the drug. Its effects may be little short of miraculous.

One patient (number 31) with gonorrhoeal arthritis exhibited a marked temperature reaction after intravenous injection of o-iodoxy benzoic acid, which was followed by involution of the signs and symptoms. The other patient with gonorrheal arthritis (number 32) received two injections by rectum with only slight relief.

Only one 0.5 gram dose of the drug intravenously was given to the patient (number 33) with acute rheumatic fever. For thirty minutes after the injection there was severe burning in the affected joints. After this there was marked relief from pain and muscle spasm. The next morning the temperature had fallen to normal and the patient was much better.

If the action of the drug in each case were to be given this paper would be unduly prolonged. A very conservative estimate, however, would place it in the first rank of drugs to be used in the therapy of arthritis, although its use by no means eliminates the necessity of using all other useful forms of therapy including salicylates. There seems to be a group of patients in whom the drug produces no relief. In this series of thirty-three cases the great value of muscle massage and training has been forcibly demonstrated. Baking and diathermy have seemed to give very little and only temporary relief. With the use of the drug, muscle massage may be instituted earlier and more vigorously in subacute joints than is usually the case.

The great majority of patients seem to retain their joint function better if they are encouraged to use their affected joints in spite of pain. Pain will usually prevent the overuse of arthritic joints. Many patients once put to bed with arthritis may stay there. There seems to be just as much danger, if not more, from rest therapy as from overuse of active joints. With the use of o-iodoxy benzoic acid patients may be encouraged to use their joints as much as pain will allow, for active function is one important factor in preventing permanent deformities.

It cannot be too strongly emphasized that this drug should not be used without making simultaneously an exhaustive attempt to find and remove the cause of the arthritis. It should be remembered that foci of infection, including teeth, tonsils, sinuses, nose, gastro-intestinal tract, urinary tract, and prostate, glandular dyscrasia, mental and physical fatigue, chronic constipation, and poor body mechanics may play an important part in the cause and progress of this disease.

Whether or not o-iodoxy benzoic acid will cure arthritis is a question that must await extended study, but the results in this series of cases would indicate that its chief action will be

found to be the production of symptomatic relief and with this increased joint function.

SUMMARY

O-iodoxy benzoic acid has been introduced by Young and Youmans of the University of Michigan in the treatment of arthritis. In structure it is similar to the salicylates except that it contains iodine and readily available oxygen. Its action is similar to that of the salicylates but it is many times more effective. When first introduced, intravenous injections were used, but it has also been found to be effective orally. When given intravenously it produces a severe constitutional reaction while administration by mouth is attended with practically no discomfort. It is analgesic, relieves muscle spasm, and reduces edema. The presence of joint pain, muscle spasm or swelling should be an indication for its use. The chronicity of a joint lesion is no contraindication for a trial of the drug. A series of thirty-three patients with different types of arthritis treated with this drug is presented.

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PSYCHOSES WITH MULTIPLE SCLEROSIS*

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My intention when I chose to write a paper on the "Psychoses with Multiple Sclerosis," was simply to report the findings in a rather interesting case which was recently admitted to the Medfield State Hospital and to compare its salient features with those of the cases observed by others. I was rather surprised to find that no comprehensive view of the subject could be obtained by reading the standard text books on psychiatry and that the observations and opinions on its various phases, as recorded in the foreign and American medical journals, though numerous were extremely variable and greatly influenced by the personal experiences of the writers. For this reason, I thought it might be well to at least attempt to summarize and correlate these observations and opinions.

As in most of the organic diseases of the central nervous system, which are accompanied by mental changes, there is a definite relationship between these changes and the physical findings in multiple sclerosis. It is for this reason that I want to outline some of the purely physical aspects of the disease before I attempt to discuss its mental aspects.

Since multiple sclerosis was first described by Charcot in 1881, almost innumerable theories have been advanced to explain its etiology, pathology and symptomatology, but to date no phase of the disease has been clearly worked out.

It is by no means a rare disease. The most recent figures as to its incidence are those of *Wechsler*[1]. They show a percentage in Europe of 1.33, and in America of 1.1 of all organic diseases of the central nervous system. It is primarily a disease of young adult life,—seventy to seventy-five per cent. of the cases, according to Wechsler, occurring between the ages of twenty and forty, though cases have been reported at the extremes of one and one-half and eighty-one years.

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Its pathology is more or less familiar to all of you. Macroscopically we find areas of degeneration, grayish or pinkish in color, varying in size from that of a millet seed to that of a walnut, scattered indiscriminately through the gray and white matter of the brain and spinal cord. They follow no law as to size, shape or distribution and may be found anywhere in the central nervous system from the cerebral convolutions to the filum terminale. Microscopically the sclerotic plaques are found to consist of interwoven masses of glial tissue, replacing the destroyed myelin, other notable features being that the axis cylinders of the individual nerve filaments are often practically intact and that in the gray matter ganglion cells which show little if any evidence of degeneration may appear in the centers of the sclerotic areas. That the blood vessels may play some part in the process seems probable from the fact that those in the sclerotic areas are often occluded by thrombi and their walls show evidences of an inflammatory process. The plaques are sharply defined and as a rule the intervening nervous tissues present no gross or microscopical evidence of changes, though secondary degeneration, signs of an inflammatory process at the periphery of the individual plaques and even meningitis have been described as occurring in the more acute cases. Southard and Solomon[2] say, "In its histological picture multiple sclerosis is at times highly suggestive of syphilis even showing mononucleosis and meningitis."

The etiology of the disease is not clear though suggestions on this point are by no means lacking in the literature. The chief point on which observers have differed is as to whether it is endogenous in its origin like certain other degenerative diseases of the central nervous system or exogenous as is the case with neurosyphilis. The former theory presumes a predisposition for which little or no anatomical basis has been found and an hereditary element which, clini-

cally has not been in evidence, though rare cases, in which the disease has occurred in two members of the same family have been reported[1]. It would seem to be supported by the fact that nervous strain, trauma, fatigue, and exposure to cold often appear to be the factors which bring on an attack.

The theory of exogenous origin, presumes a toxic basis for the disease. Cases have been reported as developing following exposure to most of the known chemical poisons and after recovery from many of the acute infectious diseases. These findings have given rise to theories of a very specific nature, most of which are faulty in that they are based on insufficient evidence. One observer will claim, because he has seen cases developing following tonsillitis or infection of the accessory air sinuses, that the streptococcus is the specific bacterium, another that it is the typhoid bacillus, because he has seen a case develop following typhoid fever. It is logical to suppose, from the very multiplicity of the toxic agents which have been noted as being present, preceding the development of symptoms that most of them may be considered as exciting rather than specific causes. Though not proven it is most generally believed at the present time that multiple sclerosis is caused by a specific micro-organism, which acts directly on the tissues of the spinal cord and brain.

Some observers claim to have transmitted the disease experimentally in animals, others to have actually demonstrated various bacteria in the lesions themselves, but such claims have not been substantiated in any case, by a sufficient number of observers to make them of value.

Prominent among the suspected micro-organisms are the streptococci and the spirochete of syphilis. In the literature of the past few years several series of cases have been reported, which have been treated with vaccines[3], notably typhoid and streptococcic, various arsenical and mercurial preparations[3,4], and even the malarial treatment for syphilis has been used[5]. In most cases favorable results have been reported but they are inconclusive because of the natural remissions, which occur, even when no treatment is given.

I will not attempt to go into the symptomatology of multiple sclerosis, at length. Everyone is familiar with the classical triad of Charcot, nystagmus, intention tremor and scanning speech, and the outbursts of uncontrollable laughter and crying, usually present in the typical case. These symptoms are still considered the most important diagnostic features, though they have been elaborated upon by more recent observers who have stressed the importance of such symptoms as weakness of the extremities, disappearance of the abdominal reflex, failure of vision, due to partial optic atrophy, and mental symptoms, as aids to early diagnosis, and the fact that a definite diagnosis may be made in the absence of one or more members of the triad.

From the very nature and distribution of the pathological lesions, it is not surprising that this disease may give rise to almost any combination of motor and sensory disturbances which lead to its being confused with almost every other organic disease of the central nervous system. For the same reason it is a remarkable fact that the cardinal symptoms often persist throughout the course of the disease and that there are frequent and complete remissions.

Taylor[6] has attempted to correlate the neurological and mental findings during life and the necropsy findings in a series of fourteen cases. He concluded that a general correlation between certain symptoms and lesions in certain localities could be made but that a precise determination of lesions from symptoms and symptoms from lesions could not be made and that there was no satisfactory explanation of the so-called cardinal symptoms.

The spinal fluid findings in multiple sclerosis serve to further complicate the picture. In the vast majority of cases they are entirely negative but cases have been reported in which they were highly suggestive of neurosyphilis.

Nonne[7] reports a positive globulin and an increased cell count in 19% of his cases. In one out of seven of Kaplin's[8] cases there was a typically paretic gold sol, and Solomon[2] reported similar cases. I found one case in the records of the Medfield State Hospital[9], where the spinal fluid showed a cell count of 2, positive albumen and globulin reactions and a gold sol which read 5554333321, but which on autopsy proved to be a case of multiple sclerosis. So much for the physical manifestations of the disease.

From a mental standpoint the picture is equally confusing.

If we were to draw our conclusions as to the incidence of mental manifestations in multiple sclerosis from figures based on admissions to State Hospitals for the Insane we would be forced to conclude that such manifestations are extremely rare. Statistics show that there were but twenty cases diagnosed as "Psychosis with Multiple Sclerosis" among 29,700 first admissions to the Massachusetts State Hospitals[10] during a period of eight years, 1918 to 1925 inclusive, and even a smaller proportion is reported by Brown and Davis[11], who found only three cases among 6,700 admissions to the Manhattan State Hospital.

For the sake of comparison let me cite a few of the many opinions on this point, as I found them recorded in the literature. Osler[12] says that "profound psychic disturbances are rare;"

Gowers[13] speaks of "rare cases of insanity;" E. Muller[14] found "slight mental enfeeblement;" in 25% of his cases, and Raecke[15] "definite dementia," in 13 and "psychic disturbances," in 9 of the 37 cases he observed. 15.6% of Sachs'[16] 141 cases had mental symptoms; Kraeplin's[17] estimate is that from 10 to 30% of all cases, "terminate in general mental enfeeblement which is not profound." Bromwell[18] found defective memory in 50% and some emotional alteration in 40% of his cases. Among the highest figures are those of Seiffer[19] who studied 10 cases and found 9 with "more or less profound mental disturbances," and his figures agree with those of Brown and Davis[11] who estimate that the incidence of mental symptoms is about 90%. Mendel[20] goes a step further and says that "mental symptoms are always present."

As may be readily seen an average of these figures cannot be taken since they are apparently based upon individual conceptions as to what constitutes evidence of mental impairment. They are sufficiently high however and from sufficiently trustworthy sources to indicate that our State hospital figures do not serve as a correct index.

The explanation which Brown and Davis[11] offer for the apparent discrepancy between the two groups of figures seems logical,—that many cases are not committed because they are physically incapable of performing acts which might lead to commitment.

It is probable that mental disturbances of varying grades, are present in a large percentage of the cases.

Probably the most common group of mental symptoms occurring in multiple sclerosis are those which have been noted by Charcot and most subsequent observers and spoken of collectively, as "mental enfeeblement." This group is generally recognized and its incidence so universally conceded that I need not quote the various observers. It includes intellectual, attention, memory and emotional disorders, occurring in various combinations, and evidenced by slowness of thought, failure of memory, apathy and indifference. Many observers stress the memory disorder. Bromwell[18] found it in 50% of his cases, Berger[21] in 12% of his and a number of cases have been reported in which this symptom has been so marked as to lead to an erroneous diagnosis of Korsakow's psychosis.

With such a group of symptoms one would naturally expect moral and ethical disturbances such as those occurring in general paresis but the majority of observers stress their infrequency. It is a peculiar coincidence that in both cases which appear in the records of the Medfield State Hospital a personality change is clearly demonstrable and in each case acts based on moral turpitude led to commitment. In one case the act which brought the patient under observation was petty stealing from one of the Boston Department stores. The other case I want to report more fully for it brings out several interesting points.

K. S.[22], a girl of 19 years, born in the United States of Lithuanian parentage, presented entirely negative family and past histories. Her home environment was good. From childhood she was considered an average, healthy, intelligent girl and she never showed any abnormal mental traits. Her social interests were normal and her moral standards high. In June, 1924, she complained of severe headaches and within the next two months developed amblyopia and weakness of the lower extremities which caused her to quit work. These symptoms soon disappeared and she seemed nearly normal for a period of several months. She then developed marked and typical intention tremors and began to have outbursts of uncontrollable laughter and crying.

She was under observation at the Boston Psychopathic Hospital from May 8 to 17, 1925, and, though a diagnosis of multiple sclerosis was made, she was not considered insane and was discharged.

From this time on she underwent a complete change of personality. She became irritable, lawless and defiant at home and she would not work, whereas previously she had been very ambitious. She stayed out nights and was promiscuously immoral for money, even going so far as to openly solicit groups of men at public entertainments.

In October, 1925, she underwent an operation at the Massachusetts General Hospital for gonorrheal salpingitis, but seemed to learn no lesson from this experience as she immediately resumed her immoral mode of living. She was haled into court, as a stubborn child, sent to the Boston Psychopathic Hospital for observation and thence to the Medfield State Hospital on a thirty-five day commitment.

On admission the physical examination was negative except for clear-cut neurological symptoms of multiple sclerosis. The Charcot triad was present and marked, the abdominal reflex absent, and though the fundi were not examined she had definite visual disturbances. Spinal fluid was entirely negative. She had a mental age of 14, and an I. Q. of .88 according to the psychometric examination. The patient's manner was childlike and simple and she expressed a rather superficial regret for her delinquencies and a desire to reform. She said that she had taken up prostitution not because of eroticism but as a purely business proposition,—other girls wore nice clothes, earned in this way, why shouldn't she? She was lacking in moral sense, judgment and insight and was given to alternate outbursts of uncontrollable laughter and crying, and occasional more prolonged periods of mild euphoria or depression. After four months of hospital residence the only change which could be noted was that the neurological signs were more marked.

This case is interesting in that it shows the typical development of the physical symptoms of multiple sclerosis and clearly demonstrates a change of personality as an early mental accompaniment of the disease, contrary to the hitherto prevailing opinion that such changes were rare. It also presents a social angle which is interesting. A wise judge sent the patient to a mental hospital rather than to a reformatory. When she came before the Staff of the Medfield

State Hospital some doubt was expressed as to her committability, yet, from a humanitarian standpoint it did not seem right to send a sick girl to a penal institution. Commitment was recommended and granted.

Eroticism has been mentioned by several observers as a frequent symptom in multiple sclerosis. This girl's delinquencies I feel were due to lack of an inhibitory moral sense rather than to eroticism since she has shown no erotic tendencies during her hospital residence.

Emotional disturbances of various types and degrees of severity are among the more commonly described mental symptoms of multiple sclerosis. There is some question as to whether the attacks of uncontrollable laughter and crying, which occur so frequently in the disease, may be ascribed to emotional instability or, as Oppenheim[23] and others think, have an anatomical origin in the involvement of the thalamus. I favor the former view for I feel that this symptom is too frequent in view of the inconstant distribution of the lesions to be considered as developing on a purely anatomical basis.

This is one of the symptoms which so frequently leads to the confusion of multiple sclerosis and hysteria in the early stages of the former disease. Many observers (Parhon and Goldstein[24], Ziglien[25], Healey[26], Gill[27], Charcot, Buzzard[28], Pierre and others) have described cases in which the two conditions could not be differentiated. To me this is not surprising, considering the age of incidence, the type and fleeting nature of the neurological symptoms, and the occurrence of uncontrollable laughter and crying, in multiple sclerosis, especially in those cases in which the Charcot tread is not a prominent feature.

Fleeting and mild attacks of depression occur rather frequently, merely as an evidence of general emotional instability. Prolonged depressive periods are relatively rare if we may judge by the infrequency with which they are recorded in the literature. I found such cases reported by Brown and Davis[11], and Spiller and Camp[30]. Berger[21] reported mild depression in eight out of 206 cases. Manic states simulating manic depressive psychosis have been noted by several observers (Redlich and Economo, Marburg, Euziere[31], Brown and Davis[11]) but I found no specific cases cited and assume that they must be rare. By far the most constant emotional state is one of euphoria, varying degrees of which have been noted by nearly all those who have written on the subject of multiple sclerosis. In its simplest form this symptom is manifested by a far more hopeful attitude on the part of the patient than his physical state would seem to warrant. Osler[12], very aptly compares this to the "spes phthisica" of pulmonary tuberculosis. A rather marked example of it is a case cited by Brown and Davis[11], that of a woman who was blind, unable to walk, so ataxic that she had to be fed, yet talked and joked about her condition, though she did not otherwise appear at all demented.

Perhaps the manic states which I have already mentioned constitute the next grade of euphoria. A more advanced stage is that which Euziere[29] characterized as "a foolish and monstrous delirium," and which most of the observers, whose experience has been at all extensive, have noted and described in similarly expressive terms. Especially in those cases where dementia is progressive and marked, euphoria seems to run a parellel course and is most marked in the cases where dementia is extreme. When it develops early, as is frequently the case, it often leads to an erroneous diagnosis of general paresis, since the neurological symptoms of multiple sclerosis may also simulate those of this disease.

In order to show how striking this simularity may be I take the liberty of quoting Dercum's[31] summary of one of his case: "In the present case the symptoms were pronounced from the outset. They consisted of a rather pronounced mental loss, a dementia, together with a decidedly expansive mental state, suggesting a diagnosis of paresis. The tremors of the lips, tongue and hands which was a fine tremor, not the coarse tremor so frequently seen in multiple sclerosis, the two attacks of hemiplegia, which suggested apoplectiform attacks, often occurring in the early stages of paresis, the fugacious character of some of the symptoms, the inconstant character of the nystagmus, the inequality and irregularity of the pupils, the fact that the light reaction became impaired in one pupil, relatively early, while the reaction to accommodation persisted,—all these facts tended to confirm or were in harmony with the idea that the patient was suffering from paresis." Necropsy proved the case to be one of multiple sclerosis. I found no less than twenty-five similar cases reported in the literature (among them those of Charcot, Von Becterew[32], Hunt[33], Seiffer[19], Raymond and Touchard[34], Cadwalder and McConnell[35], Petroff[36], Southard[37]). There is not a symptom of general paresis which may not be faithfully reproduced in multiple sclerosis, not even excepting its serological findings, excepting of course the positive Wassermann reaction.

On the other hand, the symptoms and even the characteristic pathological lesions of multiple sclerosis may probably be reproduced in neurosyphilis. Petroff[36] reported six cases in which he thought the two diseases occurred together and Fuller[38] at the Westboro State Hospital reported a similar case. Wechsler[1] reported one case in which a diagnosis of multiple sclerosis was made early only to be changed to general paresis when pupillary changes and a positive

Wassermann indicated that this was the correct diagnosis.

Southard and Solomon[39] mentioned in their book, "Neurosyphilis," two interesting cases, one of which suggested neurosyphilis and proved to be a case of multiple sclerosis even in the face of increased globulin, pleocytosis and a paretic type of gold sol in the spinal fluid. The other was strongly suggestive of multiple sclerosis but proved to be a case of neurosyphilis.

Another but much less commonly mentioned group of cases than any I have previously mentioned, are those whose symptoms simulate dementia praecox. I have already spoken of mental symptoms as a very frequent accompaniment of the disease. To this, according to several observers, (Seiffer[19], Redlich, Economo[40], Marburg[41], Brown and Davis[11]) may be added definite delusional trends of a persecutory or grandiose nature and visual and auditory hallucinations, which occur coincidently and are consistent with the delusional content. Brown and Davis[11] stress the fact that these trends are fleeting and after a brief duration give way to a state of mental deterioration, which is often accompanied by marked euphoria. These observers also cite the case of a woman who though actively hallucinated in the auditory sphere had perfect insight into her hallucinations and did not, otherwise, appear psychotic. Examination of the eye grounds in this case showed changes in the optic discs which were thought to be due to toxic influences in the higher visual centres.

In only one case, that of Kaplin[42], did I find evidence that might indicate the occurrence of catatonic phenomena, and this case was not clear cut.

From the very nature of its pathology it is not surprising to find that, clinically, multiple sclerosis may mock any other brain or nervous disease, both from a mental and physical standpoint. Thus, I found isolated cases recorded which simulated lethargic encephalitis, brain tumor, Parkinson's disease, Korsakow's syndrome, chorea and tabes dorsalis.

As is the case with its neurological signs the mental symptoms of multiple sclerosis may undergo complete remissions at any time in their course.

A question which has been frequently discussed and which most observers have frankly admitted their inability to answer is: "What is the cause of mental manifestations in multiple sclerosis?" Cases in which the brain has shown the most marked involvement have been noted to develop mental symptoms earliest and undergo the most rapid and complete mental changes. Accordingly some observers (Taylor[6], Dercum[31], Von Becterew[32], Seiffer[19], Redlich and Economo[40]) explain the mental symptoms on a purely anatomical basis. Brown and Davis[11] and Euziere[29], on the other hand, believe that they are consistent with the mental make up of the patient and merely activated by the disease.

I feel that both of these factors may have their bearing on individual cases, but that they do not satisfactorily explain the majority of the cases. It would be surprising if the lesions, themselves, did not occasionally produce symptoms, depending on their locations. I think that the more uncommon symptoms, possibly the delusional trends, hallucinations, epileptic states and the large group of atypical symptom complexes may be explained on this basis. Possibly the personality element serves to determine the nature of the emotional state. I cannot see how such physical symptoms as the Charcot triad, the loss of the abdominal reflexes, the visual disturbances and the remissions of the disease, which occur so constantly, can be explained on the basis of such inconstant pathological lesions, nor do I see how they can explain the intellectual deterioration, the attention and memory disorders, the emotional instability, and constant emotional states such as euphoria, depression, and irritability which occur sufficiently often to be considered as a definite part of the symptomatology of the disease.

If not on an anatomical basis how may such symptoms be explained? The only suggestion I can offer involves another question which has been the subject of a great deal of discussion. What is the relationship between multiple sclerosis and neurosyphilis? Clinically the former may mock the latter in its relation to the central nervous system, in every detail, except the actual presence of the spirochete and the positive Wassermann reaction. That it does so is clearly evidenced by the fact that so many men have been unable to differentiate between the two diseases during life. That syphilis is capable of reproducing the characteristic pathological lesions of multiple sclerosis seems to be indicated by the cases recorded in which the two diseases have been said to occur together. It is felt by a great many that multiple sclerosis is the result of an infectious and toxic process similar to neurosyphilis. In the latter disease it is generally felt that there is a definite anatomical basis for the mental symptoms, but no one has conclusively demonstrated the mechanism by which these symptoms are produced.

Southard and Solomon[43] thought they were due to various "microphysical conditions of pressure, intoxication, and the like," and said that, in general paresis, "many of its most striking clinical phenomena, such as loss of memory, and disorientation, as well as great degrees of apparent dementia," were found "virtually as often," in cases with very slight anatomical changes in the brain as in those with marked

cortical devastation. They concluded that the mental manifestations, were to a degree functional, rather than structural.

Is it possible that such an explanation might also apply to the mental symptoms of multiple sclerosis, that the absence of such symptoms, in certain cases, might indicate a lesser degree of toxicity of the infecting micro-organism, and the remissions a temporary abatement in the toxic process.

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SOME STATISTICAL NOTES ON PUERPERAL INFECTION IN MASSACHUSETTS

BY ANGELINE D. HAMBLEN, A.B.*

In "A Study of 984 Deaths in the Puerperal State"† by members of the Massachusetts Department of Public Health it was found that puerperal infection was the cause of 221‡ or 22% of the 984 maternal deaths. Inasmuch as puerperal infection is considered one of the preventable causes of death it seemed advisable to make a detailed study of this group of deaths. The term puerperal infection included septicemia, peritonitis, salpingitis, septic endometritis, streptococcus infection and pyemia. We omitted from our studies the records of women dying before the sixth month of gestation and of those dying after one month post partum.

OPERATIVE DELIVERY

Operative delivery preceded 131 or 59% of all deaths due to puerperal infection.

TABLE I

Method of delivery	Number	
Spontaneous	85	
Caesarean section	53	
Forceps low	16	50
Forceps medium	9	
Forceps high	25	
Version	19	
Version with forceps on after coming head	1	
Breech	7	
Induction by bagging	1	
Unknown	5	
	221	

DELIVERY BY CAESAREAN SECTION

Of the 131 operative deliveries 53 or 40% were by Caesarean section. 31 of these 53 were primiparae.

30 Caesarean sections were done in the "second stage," "late in labor," or when labor had "continued 24 hours or more." One woman whose husband was reluctant about consenting to the operation was in labor 5 days and was septic before the Caesarean section was done.

*The writer wishes to acknowledge with thanks the helpful criticisms and suggestions of Dr. Robert L. DeNormandie and Dr. Susan Coffin.
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‡The original figure was 223, but further study showed that two of these should be classified in another group.

One woman was in labor four days in a hospital. When a Caesarean section was done the head was found wedged into the pelvis which was too narrow for a possible delivery of the child. No measurements had been taken. The placenta had separated and was partly gangrenous. Another woman was in labor three days with a fibroid blocking the outlet. In one case (foot presentation) the neck snapped during the delivery of the arms. Manual extraction of the head and placenta was impossible because of enlarged promontory of the sacrum so Caesarean section was done. Also in this group of 30 "late" Caesarean sections there were two where forceps had been tried two women who had employed a midwife at home and one woman for whom this was the fifth Caesarean section.

Of the 23 other women who had Caesarean section one had five living children all delivered by normal labor and another had had three living children delivered by forceps.

In one case at post mortem examination it was found that a suture that had been introduced along the anterior surface of the uterine wall had softened and the surgical incision opened thus communicating directly with the uterine cavity.

DELIVERY BY FORCEPS

There were 50 deliveries by forceps among these 221 women who died from puerperal infection. 21 of these 50 were delivered at home where conditions were often most unfavorable. One woman weighing 305 pounds was delivered on a soft bed and had a bowel movement in bed during delivery. The adherent placenta was extracted with difficulty. Another woman delivered at home "had no nurse. The room was crowded and stuffy. Forceps were applied several times after a long labor." In still another case "delivery took 1½ hours and considerable force was necessary. The brother (living in the home) had tonsilitis and was spitting everywhere."

Four complete or third degree tears were noted.

Two women had been attended by a midwife. One was in labor two days and the other was in labor three to four days and was torn to the rectum.

One woman was in labor 62 hours and another woman was in labor two days. The district nurse came in on the seventh day and found this woman with a high temperature, foul discharge, abdomen distended, and vulva swollen. She was torn almost to the rectum.

DELIVERY BY VERSION

There were 19 deliveries by version and one by version with forceps on the after coming head. This woman was delivered in a hospital. High forceps were attempted twice and then a difficult podalic version was done. Forceps were applied to the after coming head.

Seven of the 19 deliveries by version took place at home. In two cases a midwife had been in attendance. One woman had been left in labor three or four days and the other twelve hours before the midwife called a doctor.

In five of the 19 cases delivery by forceps had been attempted.

In four cases there was a rupture or a question of a rupture of the uterus.

There were four cases of placenta previa.

OTHER OPERATIVE DELIVERIES

In addition to the above mentioned operative deliveries there were seven cases of breech extraction. One of these had an "extensive" tear and another a "complete tear into the rectum." One had a retained placenta and in one case the membranes ruptured two days before delivery. There was one case of placenta previa with twins. The doctor loosened the placenta manually and delivered it. Then the first baby was delivered by the feet. The second baby came spontaneously.

One woman was delivered after induction of labor by bagging. Autopsy showed that she had abscesses of uterus, right broad ligament, both lungs, left kidney, abdominal wall and left axilla; decubitus ulcer, and hypostatic congestion of both lungs.

NORMAL DELIVERIES

85 or 38% of the deaths due to puerperal infection followed normal deliveries. This seemed a rather high percentage. An analysis of the histories, however, showed that 15 were not delivered by a physician. 9 were delivered before the arrival of the physician and 6 were delivered by a midwife. 2 others were attended by a midwife but were delivered by a physician.

10 of the 85 women had been in labor twenty-four hours or more. 5 of these were prim parae.

10 women had post partum hemorrhages due to adherent or retained placenta.

RISE IN TEMPERATURE

A rise in temperature was noted in 204 of the histories. No information as to temperature was given in the 17 other histories.

The rise in temperature was noted before delivery in 10 cases, 3 of which were delivered by Caesarean section, 2 by forceps, 1 after induction of labor by bagging and 4 normally. Extracts from the histories are as follows:

One patient had had vaginal examinations by three physicians, had been in labor 16 hours

without progress, and delivery by high forceps had been attempted. She was delivered by Caesarean section.

Another patient had had several examinations by different people, had been in the care of a midwife, had been in labor eighteen hours and had a temperature of 102 when she was admitted to the hospital. She was delivered by Caesarean section.

One woman had been examined three or four times and had been in labor three or four days without progress. Her temperature was "up slightly" when she was admitted to the hospital. She was delivered by Caesarean section.

One patient had a temperature of 101 before delivery, which was by low forceps.

In one case the physician was called after the patient had been two days in labor with a midwife in attendance. She was then in bad shape with exhaustion and fever and was delivered by forceps.

One patient had an acute attack of fever beginning one week before entrance to the hospital. Her temperature was 102. On admittance to the hospital she was jaundiced. She was delivered three days later after induction of labor by bagging.

In one case the delivery was easy and spontaneous at the seventh month. The mother had grippe and a temperature of 104. There was uterine infection and peritonitis. The doctor stated, "the infection (from grippe) must have taken place through the blood stream for the patient was not examined."

One woman had influenza pneumonia at the time of delivery. The membranes ruptured and that night she had a chill. The next day she entered the hospital in active labor with a temperature of 101.4. She was delivered normally.

One woman had a uterine hemorrhage, chills and fever. The next day she had a temperature of 99.8. She was six months pregnant. Two days later she was delivered normally of two dead foetuses. The placenta was firmly adherent.

One mother was anemic and seven months pregnant. The physician made one vaginal examination without gloves and found the membranes not ruptured. The patient was nauseated and had some fever. Two hours after the physician left, the woman was delivered unattended of a stillborn baby.

TABLE II

Rise in temperature noted	Number
Before delivery	10
On day of delivery	18
One day after delivery	33
Two days after delivery	24
Three to six days after delivery	44
Seven days plus after delivery	20
No time stated	55
No information	17
Total	**221**

DELIVERIES IN HOSPITALS

In considering the number of hospital deliveries it should be emphasized that we are dealing here only with fatal cases and that 32% of those delivered in a hospital and dying from puerperal infection were in very bad condition and were sent to the hospital as an emergency measure.

76% of the women delivered in hospitals were delivered by operative procedure.

The 131 hospital deliveries were distributed among 61 hospitals.

TABLE III

Hospital Deliveries

Emergency	42
Routine	87
Unknown	2
Total	131
Delivered at home	90
Total	221

TABLE IV

Method of Delivery of Hospital Cases

Spontaneous	31
Operative	99
Unknown	1
Total	131

PRIMIPARAE

46% of the 221 deaths due to puerperal infection were among primiparae. A partial explanation of this high percentage may be that 73% of the primiparae and 48% of the multiparae who died from puerperal infection were delivered by operative procedure, and 25% of the primiparae and 15% of the multiparae who died from puerperal infection were sent to the hospital as an emergency measure.

TABLE V

Method of Delivery of Primiparae and Multiparae Who Died From Puerperal Infection

Delivery	Primiparae	Multiparae	Unknown	Total
Spontaneous	23	61	1	85
Operative	74	56	1	131
Unknown	4	0	1	5
Total	101	117	3	221

TABLE VI

Hospital Deliveries of Primiparae and Multiparae

Hospital	Primiparae	Multiparae	Total
Emergency	25	17	42
Routine	51	36	87
Unknown	0	2	2
Total	76	55	131

PRENATAL CARE

The lack of prenatal care was not so striking

as in the case of deaths from other causes. However, after reading some of the histories it is evidently greatly desirable that an improvement be made both in the extent and quality of prenatal care. In the entire group of 221 women there were only 24 who had prenatal care which even approximated what might be called "Grade A"*—that is, extending from the fifth through the ninth month of pregnancy, monthly urinalysis, at least an abdominal examination, and in the case of a primipara pelvic measurements.

*Dr. Woodbury of the Children's Bureau, United States Department of Labor.

TABLE VII

DURATION OF PRENATAL CARE

Less than five months	149
Five months plus	68
Unknown	4
Total	221

TIME PATIENT LIVED FOLLOWING DELIVERY

34% of the deaths due to puerperal infection occurred in less than one week after delivery.

TABLE VIII

LENGTH OF TIME PATIENT LIVED FOLLOWING DELIVERY

1 day	1*
2 days	4
3 days	17
4 days	26
5 days	18
6 days	8
7-13 days	69
14-21 days	43
22-31 days	31
Unknown	4
Total	221

*The doctor states that "pyosalpinx probably ruptured during the first stage in labor. The patient had had pain three months before in right lower quadrant. It was a typical picture of peritonitis following delivery."

MIDWIVES

A midwife had been in attendance in 14 of the 221 cases.

AUTOPSIES

There were 11 autopsies done among these 221 deaths due to puerperal infection.

FATE OF BABY

Of the 175 babies born alive 144 or 82% survived the first month.

The infant mortality rate was 160 per 1000 live births.

TABLE IX

FATE OF BABY

Stillborn	51
Died under 1 month	21
Died 1 month or over	7
Living	144
Unknown	3
Total	226*

*Five pairs of twins.

NATIVITY

It might be interesting to note that although nativity did not enter into the problem of puerperal infection the maternal death rate per 1000 births was highest where both parents were native born. This was true both for puerperal infection and all other causes.

TABLE X

MATERNAL DEATH RATE BY CAUSE AND NATIVITY

Nativity of both parents	Total births in Mass. in 1921 and 1922	Deaths from puerperal infection	Rate per 1000 live births	Deaths from all other causes	Rate per 1000 births
United States	81,205	112	1.4	358	4.4
Foreign	69,365	71	1.0	249	3.6
Mixed	32,788	33	1.0	118	3.6
Unknown	88	5		36	
Total	183,446	221	1.2	761	4.2

SUMMARY

In this study of 221 deaths due to puerperal infection it was found that:

46% were primiparae.

59% were following operative delivery.

40% of the operative deliveries were by Caesarean section.

38% of the operative deliveries were by forceps.

59% were delivered in hospitals.

32% of the hospital deliveries were emergencies.

76% of the hospital deliveries were operative.

67% had prenatal care for less than 5 months.

66% lived one week or more after delivery.

160 was the infant mortality rate.

CARE OF ANIMALS FOR EXPERIMENTATION

To answer or to forestall charges of inhumanity to animals in medical laboratories, the American Association for Medical Progress has just published the report of a survey covering virtually all of the medical colleges and research institutes in this country. Without exception a policy which encourages inspection by anyone who may be properly interested is maintained. A set of rules adopted by all institutions governs the custody, care and use of animals.

As might be expected, they provide for the kind treatment, proper feeding and bedding, and suitable surroundings of the animals, usually cats and dogs. If they are vagrants, they are held for some time to be claimed by possible owners. No operation is performed without anesthetic unless this would cause more discomfort than not using it.

While it was found to be true that all animal rooms are open to responsible visitors, and that officers of humane societies are especially welcome, it also appears that a certain class of visitor is not preferred. Those who have never seen an operation on a human being have no standard of comparison. They cannot appreciate the similarity between the methods used on persons and on animals and do not realize the precautions taken against pain and infection.—*New York Times.*

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 13081

NOSEBLEED, DYSPNEA AND COUGH

MEDICAL DEPARTMENT

An American widow seventy-three years old employed as a lady's companion entered the hospital December 26 complaining of cough of three weeks' duration.

She considered herself perfectly well until three years before admission, when she had a nosebleed lasting an hour and soaking twelve Turkish bath towels. She lost, she estimated, three quarts of blood. This somewhat relieved headaches which she was having at the time and attacks of vertigo which were brought on by fatigue or heat. She could not give definite details as to the nature or frequency of the symptoms. She had no recurrence of the nosebleed. The headaches were better. The vertigo continued to occur as a slight unsteadiness occasionally. Three months before admission she first noticed swelling above her shoe tops during the day, disappearing over night, and urination three or four times at night. She thought the amount of her urine had been growing less. She dated her present illness from Thanksgiving night, when she contracted a head cold. In three days this affected her chest. Soon afterwards she began raising half a cupful of yellow sputum a day. This continued. Two weeks before admission and several times later the sputum looked muddy and showed some blood. She had felt feverish at intervals. Throughout the illness she had felt rather chilly. For the past three weeks the edema of the ankles had been more marked. She had been very short of breath and could not sleep lying down. She did not finally take to bed until two days before admission.

As a child she had the minor diseases and scarlet fever, and was very croupy. When "a child" with her periods or when in pain she had attacks when she could not move or speak. Fifteen years before admission she had grippe followed by "bronchial trouble" for two or three months. Ever since that time a little cold would cause her to "wheeze up." After the death of her father she had headaches and neuritis for two or three years and for a time every day, requiring headache powders. She had two or three head colds every winter; no sore throats or tonsillitis. Her tongue had felt burned lately. She had had gas for three years, sour eructations and heaviness after meals, relieved by soda, with remissions for two or three weeks.

Her father and mother both died of Bright's disease, a grandmother of cancer, her husband of tuberculosis, one brother of kidney trouble with a suspicion of tuberculosis. She was associated with this brother, but said she had had no other association with tuberculosis. She was, however, very guarded as to her own respiratory history and that of her family, and this part of the history was not considered reliable. Her mother had had a little heart trouble.

Clinical examination showed a well-nourished woman, dyspneic, with frequent loose cough. The lips were moderately cyanotic. The teeth were all out. The throat was slightly red. Chest expansion was limited on the right. The lungs showed dullness at the right base posteriorly. In the axilla and anteriorly tactile fremitus was diminished. There was bronchial breathing in the axilla and in front, with egophony. There were many loud crackling râles at both bases, fewer in the upper lung fields. The apex impulse of the heart was in the fifth space. The left border of dullness was 11 centimeters from midsternum, 3 centimeters outside the midclavicular line. The supracardiac dullness was 6.5 centimeters outside the midclavicular line, the right border 2.5 centimeters. The action was regular, the sounds of good quality. There was a systolic thrill at the base. The pulmonic second sound was markedly accentuated. The mitral first sound was loud and snapping. There was a soft systolic murmur at the apex. The radial arteries were tortuous, their walls thickened. The blood pressure was 160/100. The abdomen was large and pendulous, with tenderness in both upper quadrants. The extremities, pupils and reflexes were normal.

The urine is not recorded. There is no record of the blood except leucocytes 17,000-20,500. A Wassermann test was negative. A blood culture showed staphylococcus albus in one flask, no growth in the other.

The temperature was 98.1° to 102.3°, the pulse 131-103, the respiration 30-34.

Orders. December 26. Individual precautions. Force fluids. Liquids with milk. Digitalis 4½ grains at once and 4½ grains daily. Chest swathe. Codein half a grain by mouth every three hours p.r.n. Morphia 1/6 grain. One ampule cardiazol. December 27. Caffein sodium salicylate 10 grains immediately and 10 grains every two hours p.r.n. Digalen three grains intramuscularly immediately and at four p.m. Oxygen administered through catheter. Rectal taps six ounces every four hours. Cardiazol one ampule immediately s.c.; pulse and blood pressure before and fifteen minutes after.

(Record: pulse 104 before, 108 after; blood pressure 90/40 before, 125/55 after.) Repeat cardiazol every hour p.r.n., recording pulse and blood pressure before and fifteen minutes afterwards.

At three a.m. December 27 the patient was cyanotic and stuporous, the pulse weaker but less rapid than at admission. After she was given caffein, cardiazol and oxygen she improved somewhat. At nine o'clock her color was very good but her pulse weak. The blood pressure, which was 160/100 at admission, had fallen to 100/60. She was clear mentally, but very tired. The temperature was normal and the pulse lower. During the day she became gradually weaker. Digalen was given intramuscularly. In the afternoon the temperature rose to 101°. Caffein and cardiazol had little effect. That afternoon she died.

Discussion

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

"She considered herself perfectly well until three years before admission, when she had a nosebleed lasting an hour and soaking twelve Turkish bath towels." That is quite a nosebleed. A Turkish towel ordinarily means a good sized one. I have some doubt as to that statement. "She lost, she estimated, three quarts of blood." Three quarts would hardly soak twelve Turkish bath towels. So there you are. Take it or leave it.

The important things in the present illness are cough, dyspnea and edema.

NOTES ON THE PHYSICAL EXAMINATION

On the whole those lung signs sound like fluid at the right base.

"There was a systolic thrill at the base." I suppose we all realize that a thrill is a rare thing, and important if it is true. Systolic murmurs are so common in sick patients that I should say if you went through this hospital and examined every patient, over half of them would have systolic murmurs and probably not one, or only one or two, would have any thrill. A thrill is a rare and significant sign. So if this is really a thrill we ought to pay a lot of attention to it. There are four things that cause systolic thrills, aneurysm, aortic stenosis, congenital heart disease and acute or subacute endocarditis with vegetations. If there is a thrill there ought to be some one of those four things, and of course we should like to know exactly.

There are four characteristic signs of aortic stenosis, systolic murmur, systolic thrill, diminished or absent aortic second sound and a low, flat pulse. We are not told anything about two of those, so that we really can not say much so far as the possibility of aortic stenosis goes. It does not look as though the pulse could be very low with a pulse pressure of 60. The systolic is 160, the diastolic 100. What you would expect is 120 over 100, corresponding to the flat, low pulse. The record does not say anything about the aortic second sound.

I am still entirely in doubt about that heart.

The urine is not recorded. She was in the hospital too short a time.

Blood culture showed staphylococcus albus in one flask, no growth in the other. I imagine we should disregard it.

The orders are such as you would give for a heart case ordinarily.

DIFFERENTIAL DIAGNOSIS

It looks to me as if she died of heart disease. I am not perfectly certain even of that. But that seems a reasonable assumption. She is cyanotic and dropsical in parts. We do not know about the extremities that I see. Is there any record?

A House Officer: First about the heart. The pulmonic second sound was accentuated, greater than the aortic second, which was also present and loud. There was a soft systolic murmur at both the apex and the base, and a low-pitched diastolic (presystolic) murmur at the apex. There was definite peripheral sclerosis. The lung fields were filled with loud crackling râles and bubbles.

Dr. Cabot: Anything about dropsy?

House Officer: The extremities were negative; no edema.

Dr. Cabot: The last point makes it hard to say that death was from passive congestion, which I was otherwise inclined to say. Other points are important, especially the presystolic murmur at the apex and the sharp aortic second sound. What have we to say about those? My guess is that if there was a presystolic murmur it was of the Austin-Flint type, often seen with enlarged heart. If we think it is mitral stenosis we have to face the idea of the patient's living with heart disease for fifty years or so, up to seventy-three—for mitral stenosis is a disease that rises in early life—and being well most of her life, yet no one having discovered heart disease up to the last year. I do not say that we can exclude it, but it seems improbable with such a history. The sharp mitral first sound would go well with stenosis. The aortic second sound would go very poorly with it. On the whole I am inclined to believe that this mitral valve will be found normal.

What then is wrong with the heart? Hypertrophy and dilatation, and no other change. No valve lesions. Of course if that thrill was really there that is a very dangerous thing to say, because systolic thrills do not go with simple

hypertrophy and dilatation, always with something more than that.

Can she have an acute or subacute bacterial endocarditis? I do not see how that can be excluded. She was seen for a very short time, and the history is not at all characteristic. We have no evidence of embolism. We have no chills or evidence of a long fever. She is much older than most cases of this disease, but it still seems possible.

We ought to ask ourselves if she had pneumonia. She had some signs in the chest which might go with pneumonia. Very little is said about her chest after that first examination. Is there anything more recorded?

HOUSE OFFICER: Her lungs at entrance were full of moist râles on both sides. At the right midchest in front and toward the base in back there was definite dullness, and over this area there were the signs that she had before.

DR. CABOT: There was no second examination?

HOUSE OFFICER: Further examination was obscured by massive pulmonary edema.

DR. CABOT: Yes, when patients have a lot of râles and edema it is very hard to make out what is behind.

On the whole it seems that this is more like a case dying of passive congestion and heart disease than any one other thing, heart disease probably of the hypertensive type, hypertrophy and dilatation and no valve lesion.

A STUDENT: If this house officer felt the thrill and did not hear the systolic murmur would you not be inclined to doubt the fact that he did feel the thrill?

DR. CABOT: Yes; I think that if we had been there we should not have felt that thrill.

It is perfectly possible that we are wrong. The patient was here only a little over twenty-four hours. We cannot expect these things to be straightened out in that time.

A STUDENT: How about her temperature? It goes up to 103.2°.

DR. CABOT: It certainly suggests some terminal infection. It may be just a terminal bronchitis. It might be pneumonia, although I am not at all sure of that.

A STUDENT: Dilated, rough aorta; any thrill with that?

DR. CABOT: No, it does not give a thrill. It gives a murmur. I have never felt a thrill with it. I do not believe it ever gives one.

A STUDENT: Was any laboratory work done on the urine?

HOUSE OFFICER: Yes. It was negative except for some casts.

DR. CABOT: Which you can find in anyone's urine at seventy-three. I do not think we have any good evidence against the kidneys.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Arteriosclerotic heart disease.
Bronchopneumonia.
Myocardial insufficiency.

DR. RICHARD C. CABOT'S DIAGNOSIS

Heart disease, probably primary hypertension.
Hypertrophy and dilatation of the heart.
Chronic passive congestion, general.
Terminal infection—pneumonia?

ANATOMICAL DIAGNOSIS

1. *Primary or fatal lesions*

Mitral stenosis.
Vegetative endocarditis.

2. *Secondary or terminal lesions*

Bronchopneumonia.
Acute and chronic bronchitis.
Chronic passive congestion of the lungs, liver and spleen.
Central necrosis of the liver.
Arteriosclerotic nephritis.
Arteriosclerosis of the aorta.

DR. TRACY B. MALLORY: The case was a very unusual one. In spite of her age of seventy-three she had a very well marked mitral stenosis. It was extreme enough to have in itself caused her death. Only one finger could easily be passed through the valve at the point where it was open, and there was a definitely calcified ring completely surrounding it. When opened it measured about 6.5 centimeters, instead of the normal 10 centimeters, and the edges of the curtains were thickened, distorted, and slightly calcified. The aortic valve showed a small shaggy vegetation upon the edge of the posterior cusp, and the tricuspid valve also showed a very small rough vegetation.

She also had pneumonia. The entire right middle lobe was uniformly consolidated. There was a thick mucoid secretion in the bronchi and evidence of a longstanding chronic bronchitis.

The aorta showed only a small amount of arteriosclerosis.

The kidneys' combined weight was 210 grams; a little small and firm. The capsules stripped with some difficulty and left a slightly granular surface. The cortex was slightly narrowed, only to a moderate degree.

DR. CABOT: What was the size of the heart?

DR. MALLORY: The heart weighed 380 grams; for a woman of her size and age definitely hypertrophied.

DR. CABOT: I think we were wrong about that thrill. I think it was there, due to acute vegetations.

CASE 13082

A CASE OF SACRO-ILIAC RELAXATION

ORTHOPEDIC DEPARTMENT

Patient has always had a spinal curvature. In 1916, while carrying heavy army blankets, she experienced acute onset of pain in the right lower back; soon after onset also pain radiating from the right gluteal region over the posterior aspect of the right thigh, knee, calf and ankle. Sometime later also pain in the left thigh, calf and ankle, but this has been very much less severe than the pain on the right. Did not go to bed, but kept up and about without any other treatment but hot water bag. A few weeks after onset consulted osteopath, who diagnosed displacement of the lower ribs and lower vertebrae, with irritation of kidney center. Was treated by this osteopath for six weeks, and as a result of this osteopathic treatment developed incontinence of bladder and rectum. Was taught to catheterize herself and has done so ever since, twice a day. For eight years this condition has now existed. At the present time she is able to void voluntarily but is unable to empty her bladder; at times has as much as twenty ounces of residual urine. Is extremely constipated and frequently has to resort to enemata.

From the osteopath patient went to a general practitioner who took care of her for three months without improvement. Was then referred to a genito-urinary surgeon who made a diagnosis of spina bifida occulta. Was given general treatment for cystitis, which had by that time become quite marked.

Two years after onset consulted another osteopath. Diagnosis this time sacro-iliac strain. Numerous manipulations without benefit. In addition to this osteopathic treatment was given electrical treatment for her bladder, also without benefit. In 1920, four years after onset, consulted an orthopedic surgeon who supplied her with a brace with considerable relief from "sciatica." Up to this time this "sciatica" had been quite constant, shifting from one side to the other. Since 1920 there have been periods of freedom from "sciatica."

In 1920 patient discovered loss of power in the right foot, chiefly the gastrocnemius, some power in dorsi flexion, but power in plantar flexion decidedly diminished. Was still able to keep fairly active, but could not walk long distances without bringing on "sciatica." Has been able to drive her car by using her instep, pushing down on the brake with the foot set in dorsi flexion.

Since 1920 patient had consulted two more genito-urinary surgeons and had treatment for the cystitis as well as pyelitis which came on about this time. Also consulted two neurologists and a general surgeon. No benefit has been derived from any type of treatment excepting brace treatment. Residual urine anywhere from six to twenty ounces—six ounces rarely, only when rested, twenty ounces when she is tired out.

In October 1924 patient entered a hospital, was thoroughly studied by a neurologist with the following findings: Cranial nerves negative. Upper extremities negative. Lower extremities: gait and station apparently normal until asked to step upon the chair with right foot, an act which is difficult of performance. No evidence of spasticity or ataxia observed. Romberg negative.

Strength of muscles: All muscles normal excepting gastrocnemius on the right, which is distinctly weak as compared with the left. There is definite atrophy of the right calf. No other muscle weakness observed excepting possibly weakness of the glutei.

Reflexes normal excepting for absence of ankle jerk on the right.

Sensation: There is diminished sensation to touch, needle prick, and temperature over saddle back area and over posterior aspect of both thighs. This seems about the same on the two sides. Sensation in rectum and urethra said to be greatly diminished.

Sphincters: From symptoms there is evidently considerable loss in sphincter control, both anal and urinary.

This neurologist came to the following conclusion:

"From the foregoing examination it is fair to conclude that there is an affection of either the sacral spinal cord, that is, the conus, or the sacral roots from the second down. The evidence of partial paralysis and hypoesthesia points towards a destructive lesion of these nerves rather than an irritation of them.

"A spinal puncture was performed and lipiodol injected. On the basis of these findings the following conclusions were made:

"The fluid itself is normal to all tests employed. This fact alone is strong evidence against an inflammatory process or tumor either above or below the point of puncture. Dynamic studies also show no evidence of block above the 2-3 lumbar space.

"Replacement studies by the aid of lipiodol show the sacral canal partly filled with the foreign substance, thereby excluding a large tumor or massive adhesions. A smaller lesion of like character is not excluded by these studies. However, on this point it is fair to say that we do not as yet know our normal relations as seen by lipiodol in this region.

"My conclusion from clinical and laboratory examinations is that we have no evidence in this patient of intraspinal disease. It is possible that either tumor or the result of old trauma is present, but it seems unlikely. I should be inclined to look for the source of her trouble outside of the spinal canal, either in the passage of the nerves through the sacrum or more distally."

Orthopedic Examination October 28, 1924.

Inspection: Distinct lateral curvature, no muscle spasm.

Palpation: There is sensitiveness over the right sacro-iliac region, that is the inferior sacro-iliac ligaments, as compared with the left. This is perfectly distinct but not marked. There is also difference in tenderness of the sacro-sciatic notch on the right as compared with the left, but no acute tenderness. No sensitiveness over the lumbar spine or iliolumbar angles.

Motions standing: Bends forward freely but without obliteration of the lateral curvature; the joint motion of the lumbar spine is good. Extension also shows good motion of the lumbar spine, accompanied by slight discomfort in the right sacro-iliac region. Side bending free to the right and unaccompanied by pain. To the left slight discomfort in the right sacro-iliac region.

Motions sitting: Bends forward touching chest to thighs, good motion throughout the spine, without pain.

Motions lying: Passive lumbar flexion, free, good mobility of the lumbar spine, unaccompanied by pain. Straight leg raising on the right to 70° with slight pulling sensation in the right sacro-iliac region. Straight leg raising on the left to 70° without pain. Compression of the iliac crests, negative. Extension, patient lying face down, slight pulling sensation in the right sacro-iliac region, no real pain. Abduction, patient lying on the left side, free without pain.

The X-rays show lipping of the inferior border of the right sacro-iliac joint and disalignment of the pubes. Also increased density and irregularily of the joint line.

Diagnosis:

Loose sacrum, the right side chiefly giving rise to symptoms.

Discussion of orthopedic findings:

The lumbar spine has normal mobility accompanied by pain when carried to the extremes only. On palpation there is only one point of tenderness found and that is located over the right inferior sacro-iliac ligaments. This region of tenderness is present, in the author's experience, in 100 per cent. of cases of sacro-iliac strain. The physical findings, coupled with the distribution of pain, namely distribution of first and second sacral, clinch the diagnosis. The innervation of the sacro-iliac joint is derived from the first and second sacral, and consequently any lesion of this joint is accompanied by pain along the peripheral distribution of these nerves. This distribution of pain is usually referred to as "sciatica."

It is interesting in this case to note that we have retention of urine and to try to account for this on the basis of the lesion present. Innervation of the bladder is derived in part from the second and third sacral. Is it not possible that in a sacro-iliac lesion we may have a reflex inhibition of the function of these nerves. thereby bringing about retention of urine? I have had three other cases of sacro-iliac strain in which urinary retention was present. The bladder condition has been relieved as soon as the sacro-iliac symptoms were relieved.

November 5, 1924. Arthrodesis of the sacro-iliac joint by author's method.

Post-operative course absolutely uneventful. The post-operative pain was so slight that no post-operative morphine was used, patient preferring not to have it. Following the operation patient's activities increased rapidly without any return of pain. Residual urine decreased also very rapidly, so that by February 1925 residual urine amounted to one ounce only. March 1925 patient had gained twenty-two pounds. The residual urine March 31 1925 varied from half an ounce to four ounces—half an ounce when rested and four ounces when tired.

The condition since this stage has improved, and although we still have a marked cystitis, and pyelitis as well, for which she occasionally requires treatment, her activities are unrestricted. Last winter she was able to go abroad. At no time since her operation has she had any symptoms referable to the sacro-iliac joint. There has been no return of her "sciatica"; power of the gastrocnemius has entirely come back. The residual urine still varies between half ounce and four ounces. This I account for on the basis of her chronic cystitis with thickening of the bladder wall, not on the basis of any interference with the innervation.

Discussion

BY M. N. SMITH-PETERSEN, M.D.

Dr. Cabot: I suppose the statement that incontinence was the result of the osteopathic treatment was the patient's own statement? We do not commit ourselves to anything of that kind?

Dr. Smith-Petersen: Yes, that was the patient's own story.

The spina bifida occulta was simply a shot in the dark, so far as I can see, because it was not demonstrable by X-ray.

Dr. Cabot: It was wholly occult. But if you cannot see it you do not operate, do you?

Dr. Smith-Petersen: I understand that there is such a condition. Some genito-urinary surgeons do make the diagnosis and operate and free adhesions between the lower spinal column and the cord.

I have put "sciatica" in quotation marks because as it is ordinarily used it applies to pain over the posterior aspect of the thigh and leg. This area is supplied by the first and second sacral nerves. It does not involve the fourth and fifth lumbar and the third sacral, which of

course make up three-fifths of the sciatic nerve. If we use the term "sciatica" it should apply to the whole nerve and not simply to the two-fifths involved here.

I said in interpreting the X-rays that we had proliferative changes at the inferior margin of the sacro-iliac joint, also distinct thickening and irregularity of the joint line and disalignment of the pubes. X-ray findings are not findings on the basis of which we can make a diagnosis. They are very nice as confirmatory evidence; but the diagnosis should never be based on the X-ray picture, because we have at times X-ray appearances which are abnormal without symptoms, and then again we have a perfectly definite clinical picture which is negative.

A PHYSICIAN: Did this patient have any trouble with her teeth?

DR. SMITH-PETERSEN: She had excellent care of her teeth. This was not an arthritis. I should never advise pulling the teeth for such a condition. I think on general principles if dental X-rays show large abscesses they should be attended to.

A PHYSICIAN: Would that be the cause of sciatica?

DR. SMITH-PETERSEN: No. You are thinking of sciatica in terms of inflammation. If you can give me any similar lesion that is so specific that it always picks out the same two-fifths of a nerve and leaves three-fifths of it untouched, I might listen to you. But I do not think it is a logical explanation of sciatica, which always involves the same two-fifths of the sciatic nerve.

DR. CABOT: Are you satisfied that trauma has in this particular case anything to do with it?

DR. SMITH-PETERSEN. Yes. It came on after an extremely hard walk uphill, carrying army blankets, and came on immediately.

MISS PAINTER: Are patients with spinal curvature more apt to have it?

DR. SMITH-PETERSEN: I do not believe we can say that, except that curvature renders the spine mechanically unstable, hypersusceptible to strain. At operation we usually find the joint and the cartilage thin, in places practically gone, replaced by fibrous tissue, in places a deposit of yellow pigment. Microscopically these findings are verified, showing subchondral fibrosis and replacement fibrosis. The cartilage itself shows nesting of cartilage cells due to atrophy of intercellular matrix. In cases of long duration we are sometimes unable to find any cartilage whatsoever; there is simply a mass of fibrous tissue.

DR. CABOT: At the operation can you demonstrate the looseness that you spoke of?

DR. SMITH-PETERSEN: No; I have never attempted it for two reasons. First, I do not feel that we ought to manipulate the patient on the table. We try to get the patient symptom-free before we operate; if he is symptom-free we feel that the relationship of the joint structures is normal, and we are apt to have less post-operative reaction. If we manipulate to see if we have abnormal mobility we are possibly creating a condition which will mean persistent pain afterwards. So I have not tried any leverage examination which would tend to show increased mobility. I have seen cases of tuberculosis where the ileum moved away from the sacrum with each inspiration, but I have not been able to see any such motion with respiration in the traumatic cases. My second reason for not attempting any leg motions, leverage motions, during the operation is that we are apt to break our asepsis.

A PHYSICIAN: Is the patient perfectly well now?

DR. SMITH-PETERSEN: She has normal activity, but persisting cystitis and pyelitis. But she has had no recurrence since 1924 of either "sciatica" or local pain.

A PHYSICIAN: How old was this patient?

DR. SMITH-PETERSEN: Thirty-six.

A PHYSICIAN: Would the duration of curvature of the spine ever affect the alignment of the ribs?

DR. SMITH-PETERSEN: Of course congenital curvature does affect the alignment of the ribs.

DIAGNOSIS

Sacro-iliac relaxation.

CASE 13083

AN UNSATISFACTORY RESULT OF STOMACH SURGERY

SURGICAL DEPARTMENT

A Greek dishwasher forty-seven years old entered for the first time January 13 complaining of pain in the epigastrium after meals and loss of weight.

He was well until he began work in a restaurant six years before admission. Then he began to have periods of epigastric discomfort after meals with periods of remission. At first the attacks were not severe, but they grew progressively worse. In several of them he passed many tarry stools, perhaps a dozen times. The worst attack was in April, ten months before admission. He went to the Out-Patient Department. Records of the Department show that at that time in addition to abdominal tenderness in both lower quadrants and the right upper quadrant, examination showed costovertebral tenderness, more marked on the right, and a large left axillary gland. He was given a five-meal gastric diet. He was almost free from symptoms for three months. Then they recurred. X-ray examination July 30 showed that after the stom-

ach began to fill a rounded projection about 1.5 centimeters in diameter was seen on the lesser curvature of the media. The barium was retained here a few seconds after the rest of the mixture had passed by. There was tenderness to palpation at this point. He was better and worse until seven weeks before admission, when he again went to the Out-Patient Department. Since that time he had had symptoms every day, but no tarry stools. The pain was now sharp, worse three inches above the umbilicus but radiating three or four inches to each side, gnawing and burning. It occurred from ten minutes to half an hour after eating and lasted from one to four hours. It was relieved by food, soda, a medicine given by his physician and pressure over the abdomen. There had been no nausea or vomiting. He tried to induce vomiting without much success. After the pain ceased he felt very hungry but was afraid to eat. He believed this was why his weight had fallen from 135 pounds to 104 pounds during the past year and a half. The pain had been troublesome more because of its persistence than because of its severity. His abdomen had been tender about the umbilicus, less so at the sides. His bowels had been very constipated, requiring catharties every day. Belching with heartburn had been very troublesome.

His family history and past history were negative.

Clinical examination showed a hungry looking, dark skinned, very apathetic man showing evidence of loss of weight. The examination was essentially negative except for tenderness in the epigastrium, along the right costal border and into the right costovertebral angle.

Before operation the amount of urine was not recorded, specific gravity 1.020, cloudy at all of three examinations, no albumin or sugar; sediment showed 40 leucocytes per field at one examination, also red cells. Pre-operative blood examination: leucocytes 8,900, hemoglobin 80 per cent., reds and differential count normal.

X-ray examination showed projecting from the lesser curvature in the upper part of the pars media a rounded area of increased density which had much the appearance of an ulcerating lesion containing barium. Peristalsis did not pass over it. On the greater curvature directly opposite this area was another small projection which it was thought might be due to spasm or organic deformity. There was considerable tenderness over this area, and the stomach could not be palpated to determine the flexibility of the walls. Peristalsis passed over the lower third of the stomach, but there was a small retention from the motor meal at the end of six hours. The first portion of the duodenum appeared normal in contour. The six hour meal was found in the cecum.

Before operation the temperature was 96.3° to 98.8°; the pulse and respiration were normal.

January 16 operation was done. The patient made a good operative recovery. The following afternoon the temperature, pulse and respiration suddenly shot up. There was considerable distension and epigastric pain, tenderness and spasm. The patient spat up small amounts of gastric contents. In two days this had quieted down and the chart was normal. January 30 he was discharged.

History of interval. During the next year and four months he suffered more or less continually from the old epigastric pain. For three weeks before his second admission this pain was constant and severe. For the three days before readmission he had vomited "all the time." He felt very weak and apprehensive. June 3 he went to the Out-Patient Department and had a series of gastro-intestinal X-ray plates made. No gas or barium was found in the peritoneal cavity.

June 4, sixteen months after his discharge, he reëntered through the Emergency Ward for relief of intense, continuous epigastric pain and vomiting.

Upon clinical examination he was emaciated, dehydrated and had an expression of apprehension. The skin and mucous membranes were cyanotic. The epigastrium was exquisitely tender to pressure. The abdomen was spastic, slightly distended throughout and very sensitive to pressure. No mass was felt. The fingers were clubbed.

Urine examination showed a very slight trace of albumin, 3 to 5 leucocytes per high power field. Blood: leucocytes 7,000.

Temperature 97.3° to 102°, pulse 72 to 140, respiration 12 to 32.

Operation was seriously considered, and the patient was sent to the amphitheater the day of admission, but on further consideration operation was deferred. June 5 he was started on milk and Sippy powders. He took fluids poorly. He remained in much the same condition for two days, occasionally vomiting. June 7 the cyanosis was more intense, the pulse higher, the abdomen rigid, and he was in considerable discomfort.

That day operation was performed. He was in very poor condition after it. That evening he died.

Discussion

BY EDWARD L. YOUNG, JR., M.D.

Pain in the epigastrium coming on in relation to meals, loss of weight, remissions in the attacks with increase in their severity all point toward organic disease of stomach or duodenum. If we add to that tarry stools we have a combination of symptoms which cannot be disregarded.

The first examination was rather indefinite as we have it here, but in spite of that he was put on a diet which suggests that they thought more strongly of the diagnosis of ulcer than the story spells to us. The fact that his symptoms were improved on a careful diet gives us a therapeutic test of considerable value.

The X-ray taken the second time seems to bear out their feeling of organic disease in that it shows probable ulcer of the stomach. The recurrence of symptoms may be due to the fact that he grew careless in his diet or that in spite of diet the disease was progressive. His loss of weight is consistent with either malnutrition or malignant disease.

I should like to ask Dr. Holmes what the roentgenologists consider the X-ray differential between a beginning carcinoma and a small ulcer? I believe he used to say that a projection such as this described with an ulcer on that almost always made them suspicious of malignant disease. I wonder if that is true now.

Up to the time of admission then, as we have the story and examination, we are sure that there is an organic disease of the stomach. The X-ray taken in the hospital showed a lesion in the same place as the first X-ray. I should like to ask Dr. Holmes again if he will tell us in this particular case whether he thinks it is cancer or ulcer?

Dr. Holmes: In answer to Dr. Young's question, the differentiation between ulcer and cancer is always difficult. In this type of lesion the distance that the barium shadow projects beyond the stomach suggests that it is a penetrating lesion. Actual penetration of the gastric wall is more likely to occur in ulcer than in cancer. The note states that there was stasis. Stasis is also more likely to occur in ulcer than in cancer. There is also evidence of rather active peristalsis, another sign of ulcer. On the X-ray I should understand we had present ulcer first.

PRE-OPERATIVE DIAGNOSIS JANUARY 16

Gastric ulcer?
Cancer?

OPERATION, FIRST ADMISSION

Gas and ether. Median incision. On palpation of the stomach a large indurated area almost the size of a silver dollar presented on the anterior wall of the stomach at the lesser curvature. Externally stippling was present over this area. To palpation it was very firm. Although it was thought to be ulcer there was also a possibility of malignancy. This area was packed off from the surrounding abdomen with wet sponges. The central portion of the ulcer was perforated with a cautery and the cauterization was carried peripherally until a defect existed about equal in diameter to a ten cent piece. This defect was closed with three layers of invaginating sutures. The pylorus was then delivered and an incision about an inch long through all the coats made parallel to the lumen. This incision was then closed with two layers of continuous catgut which very materially increased the diameter at this point. The wound was then closed in layers without drainage and the patient sent to the ward in good condition.

FURTHER DISCUSSION

The question of treatment is next. I think there is a very great unanimity of opinion that with a stomach lesion which gives evidence of being a penetrating lesion, particularly in the cancer age, operation should always be done. The possibility of malignant degeneration of an ulcer has to be considered, although it is not so great as we were led to believe some years ago. Moreover a gastric ulcer can be excised in many cases leaving presumably healthy tissue behind, sometimes with and sometimes without an accompanying gastro-enterostomy.

Although the surgeon thought there was a possibility of malignancy he treated the lesion as though it was in fact ulcer, destroying it with the actual cautery and then closing the defect in the wall. In addition to this he gave better drainage through the pylorus by doing a plastic on it.

The patient apparently did very well and was discharged two weeks after operation. From the story in the interval, however, he was not cured. It is hard to say whether that was due to the persistence of some of the ulcer which was not destroyed, to perigastric adhesions, or to a fresh ulcer. We do not know whether he gained back the weight that he lost or just what his general condition was, but he was in poor enough condition so that he was sent back into the wards.

The possibility of perforation has to be considered. The examination does not prove it and the patient was put to bed for further study.

The story following admission for the next three days until operation is the story of increasing trouble. From the description it may be due to increasing peritonitis. A perforation of a viscus does not of course have to be the sudden overwhelming catastrophe that it often is. A gradual break through the wall of the stomach, for instance, will result in a localized protective peritonitis and from that the spread of damage is much more insidious than with a rapid clean-cut perforation.

I assume the operation was done on the basis of perforation, with a possibility that having gone as long as this, repair of the perforation and drainage ought to help the patient.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Perforation of the stomach.
Possibly localized peritonitis.

PRE-OPERATIVE DIAGNOSIS JUNE 7

Subacute perforation of the stomach.
Peritonitis?

OPERATION, SECOND ADMISSION

Ethylene. Incision through right rectus muscle. There was no peritonitis. The jejunum was considerably dilated. Adhesions of the stomach to the old scar. Some induration under the liver. On exploration of this region the finger entered readily a cavity from which came gas and thin fluid with a fecal odor. It was uncertain what this cavity was. The contents seemed intestinal. Aspiration of fluid by suction tube introduced into this cavity. Rubber tube, one cigarette wick, and wound partly closed.

Further Discussion

Perforation is apparently what was found. We do not know from the description of the operation any more than we did before as to whether this is ulcer or carcinoma. I think we will say ulcer, subacute perforation, abscess and death from that, with a possibility that the pathologist will report a carcinoma as the underlying condition.

CLINICAL DIAGNOSIS

Perforating gastric ulcer with localized peritonitis.
Exploratory laparotomy, drainage.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Ulcer of the stomach.
Subacute perforation.
Abscess.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Ulcer of the stomach with perforation.

2. *Secondary or terminal lesions*

General peritonitis.
Hemorrhagic edema of the lungs.

3. *Historical landmarks*

Operation wound.
Scar of the old operation wound.
Slight hypertrophy of the prostate.

DR. RICHARDSON: The anatomical conditions in this case are perfectly clear. He was a well developed, poorly nourished white man said to be forty-eight years of age. The head was not examined.

Trunk. The abdomen was slightly distended and the wall was rather tense. In the median line extending from the umbilicus upward there was an old linear scar 11 centimeters long and extending from the umbilicus upward in the median line there was the operation wound mentioned. Subcutaneous fat in small amount. Muscles negative. The peritoneal cavity contained a small amount of opaque purulent fluid material, and the peritoneum generally showed frank fibrinopurulent peritonitis. The appendix was negative. The esophagus was negative. The stomach was rather small. At a point in the region of the lesser curvature and about 4 centimeters above the pylorus there was an oval loss of substance about 3.5 by 2 centimeters. This ulcer had slightly overhanging margins and a dirty grayish base which in the region of its lower half was necrotic and presented a ragged margined opening about 1.5 centimeters in diameter. At a point 3 centimeters below this ulcer and near the pylorus the stomach wall was thickened over a small area, and in this situation there was a strand of suture material. On the peritoneal aspect in this region there was a patch of old adhesions. The peritoneal aspect of the perforated ulcer presented a surrounding patch of fibrinopurulent material. The inferior surface of the left lobe of the liver was bound to the anterior wall of the stomach in the region of the upper margin of the ulcer by old adhesions. The pylorus was only slighly constricted. The intestines were distended but otherwise negative. Mesenteric and retroperitoneal glands were negative.

There were a few scattered old pleural adhesions. The trachea and bronchi and bronchial glands were negative. The lung apices were negative. The tissues showed a moderate amount of hemorrhagic edema. There were no areas of consolidation.

The pericardium was negative. The heart weighed 245 grams. The myocardium, valves, cavities and coronary arteries were negative. The aorta and great branches and the portal vein and radicles were negative.

The liver, pancreas, spleen, adrenals and kidneys were negative. The bladder was distended with urine and the trabeculae were rather prominent.

Prostate. In the situation of the so-called middle lobe there was a small bar of prostatic tissue which slightly obstructed the urethra. The prostate was otherwise negative. The seminal vesicles and testes were negative.

A case, then, of ulcer of the stomach with perforation and general peritonitis.

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THE HEARING ON THE VACCINATION BILL

PROBABLY only a comparatively few Fellows of the Massachusetts Medical Society realize that for eleven years Dr. S. B. Woodward has dedicated himself to the collection of data relating to the efficiency of vaccination, winning the support of the prominent educators of the Commonwealth and placing the facts upon which his arguments have been based before the legislature and the people of the State.

We venture to affirm that no one man in recent years has marshalled an equal array of statistical evidence on this subject.

Dr. Woodward's devotion to the affairs of the Massachusetts Medical Society led to his election as president for three years, an honor which has not been conferred since his retirement from that office.

Beginning with his first term as president and during each succeeding year he has been a spectacular figure before the Legislative Committee on Public Health, pleading for the protection of those who, through lack of understanding, are unable or unwilling to secure the benefits of vaccination. The scope of his appeals has been extended to apply also to the economic importance of the prevention of epidemics of smallpox. Time and time again he has begged for the united support of the doctors of the State and as often his urgent solicitations have met with indifference on the part of the majority of that body of citizens when endorsement would have been most potent in securing the desired legislative action.

This year undaunted, indifferent to the opposition, jibes and criticisms of his antagonists he will enter the arena and battle for the children who, in unvaccinated communities, are the greatest sufferers from the disease. He will present arguments which should convince all unprejudiced persons that smallpox carries unnecessary suffering and death, and is an avoidable financial burden. Further, that although Massachusetts has an enviable record because of her requirements that the pupils in the public schools must be vaccinated, unless exempted because of alleged unfavorable physical condition, there is an inherent weakness in the law because it does not apply to vaccination of pupils in private schools.

His arguments will be presented before the Legislative Committee, February 28, in the Auditorium of the State House.

Dr. Woodward has labored these years as no other man in the State has ever done before. The responsibility of every individual doctor who believes in vaccination is as great, to the extent of his influence, as that which has been recognized by this champion of preventive medicine. All that is asked of the profession is that every doctor will interview or write to his senator and representative and request that compulsory vaccination shall be made to apply to pupils in all the schools of this State.

The man who does not do this, unless he is a conscientious objector, must determine for himself whether the unpleasant designation of slacker should be applied to him.

NURSING BY APPOINTMENT

NURSING by appointment or "hourly nursing" as it is sometimes inappropriately called, is a device to fit nursing service more exactly to the needs of the patient. The full time trained nurse in the home is, except for the wealthy, out of the question, unless in emergency. But many patients, in convalescence from operation or after confinement, for example, need expert nursing care for an hour or two a day and are in position to pay for it at a reasonable rate. For these, a full time trained attendant is not appropriate and may be inadequate.

To meet this need, three plans have been undertaken in various communities and developed with varying success. The individual nurse has attempted to develop the service on her own responsibility. Or, central nurses' directories, as in Chicago and Rochester, N. Y., have employed

the nurses on full time and directed the service. Or, visiting nurse associations have offered this service in connection with their other work, as in Philadelphia, where it has been, perhaps, developed further than anywhere else, and in Boston. But it has received little emphasis, and almost no publicity.

A visiting nurse association would seem to be the most appropriate organization to conduct such a service since it has already the necessary machinery, especially for supervision and adapting itself to fluctuations in demand for service.

Recently the Board of Managers of the Community Health Association, Boston, have, to meet an apparent need, decided to lay greater emphasis on the service which they have offered for several years, planning to increase it as occasion arises, and have called the attention of the physicians to the nursing by appointment which is available. Nurses may be reached by calling the headquarters of the Association, or one of the branch stations.

The need for this service is apparently considerable, and the procedure devised seems practicable. It is hoped that it will be given a fair trial in Boston.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

DEAVER, JOHN B., L.L.D.; M.D. University of Pennsylvania School of Medicine 1878; F. A. C. S.; Emeritus Professor of Surgery University of Pennsylvania School of Medicine. His subject is: "Modern Conceptions of Upper Abdominal Disease." Page 297. Address: 1634 Walnut St., Philadelphia, Pa.

NICHOLLS, ELGIVA A., Diplomée in Household and Social Science, King's College University, London, 1921; Dietitian at the Massachusetts General Hospital. Her subject is: "Suggestions for the Administration of the Minot & Murphy Special Diet for Pernicious Anaemia." Page 302. Address: Massachusetts General Hospital, Boston.

SMITH, MILLARD, B.S.; M. S.; M. D. Harvard Medical School 1923; Assistant in Medicine Harvard Medical School; Assistant in the Thorndike Memorial Laboratory, Boston City Hospital, Member Society for Experimental Biology and Medicine and the American Chemical Society. His subject is: "The Use and Action of O-Iodoxy Benzoic Acid in the Treatment of Arthritis." Page 305. Address: 472 Commonwealth Ave., Boston.

HOWES, SETH F. H., A.B.; M. D. Harvard Medical School 1918; Member New England and American Psychiatric Societies; Senior Assistant Physician Medfield State Hospital. His subject is: "Psychoses with Multiple Sclerosis." Page 310. Address: Medfield State Hospital, Harding, Mass.

HAMBLEN, ANGELINE D., A.B. Statistician in the Massachusetts Department of Public Health. Her subject is: "Some Statistical Notes on Puerperal Infection in Massachusetts." Page 315. Address: Massachusetts Department of Public Health, State House, Boston, Mass.

MISCELLANY

DOINGS OF THE BOARD OF REGISTRATION IN MEDICINE

AT a meeting of the Board February 3, 1927, the registration of Dr. Robert E. Conlin, now in states prison under conviction of having performed an abortion, was revoked.

The Registration of Dr. Daniel W. Dorman was suspended on evidence of irregularities in prescribing whiskey.

Dr. John M. Birnie was elected a delegate to represent the Board at the Annual Congress on Medical Education, Medical Licensure and Hospitals, which was held in Chicago, February 14, 15, and 16. Dr. Francis X. Corr was elected alternate.

FOREIGNERS IN CENTRAL CHINA IN DANGER

ACCORDING to a report from Yale-in-China sent to the Trustees in New Haven conditions in the province of Hunan are so severe that foreigners are convinced that the hostility has assumed a dangerous stage, and that they must not remain. This means that the College in China cannot open for the next term.

THE SHEPPARD TOWNER ACT

WE are to have two years more of the work under the Sheppard Towner act, but Congress has voted that its operation will cease in 1929.

Massachusetts and the few other states which did not accept the provisions of the act are vindicated. Either the results do not justify the operation of this act or Congress has come to believe that the Massachusetts attitude is ethically correct. No state is so poor or so ignorant that it cannot give all needed instruction to its people.

The extensions for two years is due, in all probability, to the belief that federal aid has made certain states recognize that they are lame ducks and should have federal assistance for two years more. Meantime the self-respecting states will continue to help carry those which receive the subsidy.

LIQUOR CONTROL

A NEW bill on Liquor Control (House 17040) has been introduced in Congress by the House Committee on Ways and Means as a substitute for the Andrews bill which met with an adverse Committee report.

This bill provides for a directorate of the proposed Medicinal Liquor Corporation to be appointed by the Secretary of the Treasury to serve until 10,000 shares of the common stock shall have been sold. Successive Boards shall be chosen annually. Stock will be issued for public subscriptions. The new bill provides for the acquisition of existing liquor and for the building or leasing of not more than two distilleries. The corporation will be given power to fix the price for whiskey.

The Retail Druggists Association is not favorable to the bill.

OBJECT OF THE ASSOCIATION AGAINST IMPURE LIQUOR

THE Association Against Impure Liquor is in no way concerned with any movement for or against the repeal of the laws relating to liquor. Its purpose is to secure a membership comprising physicians, hospital authorities, pharmacists and citizens who realize the necessity of purity in liquors administered to the sick.

It is believed that those to whom medicinal liquor is prescribed by competent physicians are entitled to liquor corresponding to the test of the United States Pharmacopoeia and the therapeutic authorities dealing with medicinal liquors.

It is believed that in the interest of the public health, and the freedom of the reputable physicians of the country, to comply with the terms of the law, there should be an adequate supply of pure medicinal liquor as readily and as certainly available as other medicines; and that the physicians of the country should feel secure from unfair restrictions, and unwarranted criticisms, in prescribing and administering liquor whenever, in their professional judgment, such liquor is required.

It is proposed, through this organization, to urge upon all reputable physicians, to secure Federal permits, and be prepared to prescribe and administer medicinal liquor wherever needed, and to this end, to urge all honorable means of securing relief to the profession from the harassing restrictions now found in the regulations. The effect of these regulations has been to cause many physicians to refrain entirely from securing permits, and prescribing, or administering liquor, lest they endanger their professional standing on account of unwarranted criticism. This Association wishes to aid in protecting reputable physicians, and in adding to the confidence of both physician and patient.

It is a sad fact that the burdens placed upon the pharmacists and physicians in securing and administering pure medicinal liquor have led to the use of illicit, in place of authorized, medicinal liquors. Aside from all other considerations, the notorious impurity of the so-called bootleg liquors makes resort thereto in cases of sickness a shocking illustration of the disability of the physician to secure pure medicinal liquor when prescribing.

The Association Against Impure Liquor is convinced that, regardless of views on the principle of prohibition, the medical and pharmaceutical professions, and the intelligent public, should generally support the purposes for which it is organized. Its objects are fully within the spirit and intent of the national laws and should have the coöperation and support of all good citizens.

A CONFERENCE RELATIVE TO PHYSICAL EDUCATION

A CONFERENCE of institutions giving professional training in physical education will be held on March 30, 1927, it was announced at the Interior Department recently.

The meeting is being arranged by the Federal Bureau of Education of the Interior Department and is the second conducted under the auspices of this Bureau. The sessions will be held in the auditorium at the Interior Department building.

According to the Bureau of Education, the number of educational institutions in the United States now affording special training in physical education has greatly increased during recent years. There are now more than 150 universities, colleges and special schools maintaining courses of instruction in this phase of education.

At the first conference, held in 1925, committees were appointed on "Entrance Requirements," "Curriculum" and on "Objectives in Physical Education." The delegates voted also that a survey on classification of schools be secured. Besides the reports of these committees and the discussion of the reports, the following subjects will be taken up at the coming sessions: "A Standard Nomenclature of Courses," "The Training of Physical Education Teachers for the Field of Health Education," "Should Pupils be Allowed to Specialize and When?" and "To What Department in a University Does Professional Work in Physical Education Belong?"

REMARKS AT THE DINNER OF THE ROXBURY DINING CLUB, JANUARY 24. BY DR. ARLIE V. BOCK

THE speaker introduced his remarks by quotations read from the works of Stephen Hales, minister, physiologist, and inventor, who, two

hundred years ago, became interested in the "hydraulicks" of the circulation of the blood. He was the first to measure blood pressure and was one of the first to attempt an estimate of the total output of the heart per minute. He made a calculation of the surface area of the lungs based on actual measurement of the size of an alveolus. He carried on experiments to measure the changing resistance to blood flow from the large to the smallest arteries and capillaries, and even atempted an estimate of the total number of capillaries in the body of a man weighing one hundred and fifty pounds. By infusion of various solutions he recognized the influence of their contents on the contractility of the capillaries. He observed, with the aid of a microscope, corpuscles passing in single file through the capillary vessels in the abdominal muscles of the frog. He also pointed the way to some principles involved in surgery of the chest, with respect to the maintenance of breathing during operation.

For the modern worker the enthusiasm of Hales is as a beacon light. He saw the body as an integrated whole, of "the most exact proportions of *number, weight and measure.*" "The most likely way, therefore to get any insight into the nature of those parts of the creation, which comes within our observation, must in all reason be to number, weigh and measure." Each experiment suggested another and so he was led on through twenty-five years of endeavor before publishing his books.

The speaker then discussed the work now in progress at the Massachusetts General Hospital concerned with breathing and blood flow. The quantitative changes in blood flow, ventilation, respiratory quotient, vital capacity, pulse rate, and blood pressure occurring with change of position of the body (lying, sitting and standing) were discussed, not only in relation to normal physiology but with respect also to their bearing on patients suffering from cardiac disease. Graphs showing the effects of atropin and of adrenalin on the blood flow, pulse, pulse pressure and metabolism were presented. The blood flow in cases of exophthalmic goitre was contrasted with that found in patients having myxedema. The reaction of the heart, lungs and blood to increasing grades of exercise while the subjects rode a stationary bicycle brought out the remarkable efficiency of the heart as a pump.

Who of us now interested in the "hydraulics" of the circulation of the blood would not like to recall Stephen Hales from the spirit world to guide our faltering steps?

A NEW STATE PSYCHIATRIC HOSPITAL FOR NEW YORK

CONTRACTS for the construction of the new State Psychiatric Hospital and Institute, to be built in New York on a site provided by Columbia University at 168th Street and Riverside Drive, were awarded at the final meeting of the State Hospital Commission, which was succeeded on January 1 by the Department of Mental Hygiene.

The institution will be a centre for scientific research into causes and prevention of mental disorders and as a teaching centre for the training of mental specialists. In it the research work of fourteen civil State hospitals will be coördinated.

The new building will be of eleven stories. The hospital will provide beds for 210 patients of both sexes. An entire floor will be given over to the children's department, with school rooms, work shops and play rooms.

All varieties of adult mental diseases will be studied.

There will be the latest diagnostic and treatment facilities, including hydrotherapy, electrotherapy, occupational therapy, light therapy, physiotherapy, gymnastic psychotherapy and special medical and surgical procedures.

Most of two floors will be devoted to the out-patient department.

The tower rising nine stories above the main structure of eleven floors, will house the library, museum record rooms, doctors' offices, staff conference class rooms and various research laboratories designed and equipped for special studies in neuroanatomy, neurophysiology, neuropathology, clinical pathology, chemistry, bacteriology, serology, endocrinology and experimental psychology.

Being close to the Columbia-Presbyterian Medical Centre and medical college, the Institute will provide for psychiatric instruction in connection with virtually all its departments. Its teaching facilities will be open to the Columbia University Medical School and others, and for the post-graduate instruction of physicians. —*N. Y. Times.*

LAWS RELATING TO VACCINATION

THE Public Health Service is engaged in compiling the laws which have to do with vaccination now in operation in the United States. This compilation will make a volume of five hundred pages and will contain abstracts of decisions by State and Federal Courts.

RESPONSIBILITY FOR WATER BORNE EPIDEMICS

IN 1925 there were four separate outbreaks of water borne epidemics in Illinois. Several cities were served by a water supply which caused twelve cases of typhoid in one, and fifteen in another.

The State Department of Health had repeatedly recommended chlorination because of the

suspicion of pollution, such as sewers, privies, cesspools and the Chicago Drainage Canal.

The Attorney General of Illinois has given a legal opinion which has been summarized, according to the United States Daily, as concluding that cities, water companies and individuals supplying water for general use are liable for injuries to health resulting from contamination of such waters if the owners or operators of such water supplies have not exercised reasonable care in discovering and preventing possible contamination of the supplies or have not given due warning to the consumers that the supplies are subject to dangerous conditions.

BOSTON TUBERCULOSIS ASSOCIATION

THE 10,000 Annual Membership letters of the Boston Tuberculosis Association were sent out a few days ago. The members of the Association help in the work at Prendergast Preventorium, the Modern Health Crusade, the Placement Work and the Educational work necessary in the fight to stamp out tuberculosis in Boston. Now that the mortality from consumption in this City is steadily decreasing, the Association feels that everyone should assist in some way to completely wipe out the disease. The work is entirely dependent on voluntary contributions and is in no way supported by funds from the city or other official sources.

Dr. John B. Hawes, 2nd, President, said: "The children of our city and especially those who have been exposed to tuberculosis, if they are not to become consumptives of the future, must be treated and trained how to live. At our Preventorium, we are doing for a few what should be done for hundreds of other Boston children. The care and training of these children as well as our educational work in the schools and in factories, and finding suitable occupations for those handicapped by tuberculosis should be continued and enlarged upon."

On Tuesday and Friday of last week a group of nurses from the Massachusetts General Hospital visited the Prendergast Preventorium as a part of their training. Dr. George S. Hill, Chairman of the Preventorium Committee, gave a talk on the "Value of Preventorium Care for the Child" and Bernice W. Billings, the Executive Secretary, told of the general work of the Boston Tuberculosis Association.

TREATMENT OF FROSTBITE

THE time-honored method of treating frostbite is discredited by Dr. B. R. Rickards, Director of the Divison of Public Health Education of the New York State Department of Public Health. He advises against rubbing the parts with snow, and, instead of cold applications, the use of moderate warmth and wrapping the affected parts in cotton or wool, lightly bandaged. If the circulation returns, keep the parts dry. Greasy preparations should be avoided. If blisters or gangrene follow frostbite, a competent surgeon should have charge of the case.

TESTS SHOW VALUE OF MEAT PROTEINS AS ARTICLE OF DIET

THE supplementary value of certain meat proteins to that of vegetables has been shown by research conducted by the Bureau of Animal Industry, which points out in a statement just issued that food combinations including meat proteins are highly nutritious. The text of the statement follows:

Research conducted by the Bureau of Animal Industry of the Department of Agriculture, shows the high supplemental value of meat in connection with vegetable proteins.

EXPERIMENTS ARE CONDUCTED

Feeding experiments with albino rats showed that the protein of beef enhances to a remarkable degree the nutritive value of protein in wheat, bolted wheat flour, corn meal, oatmeal and rice. When each of the products named was the sole source of protein in the diet, beef was found to be much more efficient for promoting growth than equivalent amount of protein in the form of wheat, wheat flour, oatmeal, or navy beans. But when combinations of equal parts of beef and vegetable protein—or even one part of beef and two parts of vegetable protein—were fed, the mixtures were practically as efficient for promoting growth as when beef protein alone was used, except in the case of navy beans and potatoes.

NUTRITIVE VALUE SHOWN

Briefly, the experiments show the high nutritive value of food combinations including meat proteins. The progress of research concerning food value, flavor and palatability of meat receives special mention in the recent annual report of the chief of the Bureau of Animal Industry—*U. S. Daily.*

CORRESPONDENCE

LONDON LETTER

(From Our Own Correspondent)

London, January 26.

MR. BALDWIN ON PHYSICIANS AND POLITICS

At the annual dinner of the Royal Society of Medicine held in London a short time ago the newly appointed president, Sir James Berry, F.R.C.S., being in the chair, Mr. Baldwin in a humorous speech suggested somewhat of an analogy between members of the medical profession and politicians. He pointed out that they were both physicians, although he pre-

ferred physicians' patients to his own. He had been trying to prescribe for some time with complete failure. The common good which they shared was a very simple one. It was to try to attain perfect health under a normal balance of functions, a harmonious coöperation of all the organs whether of the State or of the body. He thought that the State might be described in physical language as an infinitesimally complex assembly of growing structures never at rest. The cells that composed it were always being born and always dying, and throughout the change there was moving equilibrium of the whole. They were subject not only to distemper but disease. Temperature in politics varied almost as rapidly as temperatures varied in cases with which doctors had to deal. After proceeding for some time in a like humorous strain Mr. Baldwin concluded by pointing out that medical men had one great advantage over him as prime minister. They did sometimes get emoluments that were appropriate to the confidence reposed in them by the public, but he did not. If any politician did his salary would vary with the seasons of the year. Just after the great strike he would have had a remuneration which would have satisfied even him, but possibly now it would be a much more modest figure. What it might be next year he would hardly like to prophesy. He had a very profound respect for the medical profession as he had for all the kinds of work its members did. He thought, perhaps, the medical profession, if it had one special claim to greatness, was that it was a profession above all others in which more was freely given to the people of the largeness of their hearts, wisdom and experience, than any other profession in the world. That was the great difference between politicians and medical men, and there was the great advantage to the latter. Politicians could never see the result of their work which they hoped for. They could do nothing but lay foundations and try to teach the people.

THE LUST FOR OPERATING

In Sir James Berry's speech he dealt with the craze for operating among general practitioners. He said that one of the many evil after effects of the war was that a great wave of well-meaning enthusiasm for operative surgery had spread over Great Britain and other countries. Many difficult and dangerous surgical operations were being too lightly undertaken by those whose training, experience, and judgment, were often insufficient, and who were not devoting themselves exclusively to the practice of surgery. Those who were behind the scenes in the surgical world saw only too much of what was going on. Successful major operative surgery in civilian practice must depend upon a solid foundation of pathological anatomy and clinical experience. The limited field of war surgery, necessarily concerned, as it mainly was, with the surgery of injuries in otherwise healthy individuals, was, in itself alone, but an indifferent school for the surgery of civilian practice. The only remedy for this state of things was increase of knowledge in the world of operating surgeons.

HIGH COST OF ILLNESS IN GREAT BRITAIN

It is stated on presumably good authority that sickness in this country at the present time is so expensive that many persons fearing the doctor's charges are treating themselves, in spite of the fact that a wave of influenza is sweeping the land. It is asserted that, regarded from the cost of medical treatment alone, sickness is more than twice more expensive than before the war. The physician's explanation is that not only have rents, rates, wages, taxation and the cost of living generally increased immensely, but the price of drugs has gone up to an amazing extent. During the war no one had time to devote to drug production and many of the plantations, such as cinchona, for instance, were allowed to spoil and it would take many years for them to recover. Also the government high duty on alcohol had much to do with the increased price of drugs.

ANTHRAX AT THE LONDON ZOOLOGICAL GARDENS

Two elephants died recently at the London Zoological Gardens, and, at the instigation of the Ministry of Health, Dr. S. Monckton Copeman took charge of the investigations into the cause of death, which was found to be anthrax. Owing to the weight and size of the elephants the bodies had to be dissected and carted away piecemeal after death. Although most careful precautions were taken it was while engaged in this work that four men who are at present in St. Thomas's Hospital became infected. Fortunately the disease was recognized in such an early stage that its advance was prevented by the administration of serum. The origin of the outbreak still remains a mystery, although every possible source of infection has been subjected to the most rigorous bacteriological examination.

A PROPOSED CHAIR OF DIETETICS IN LONDON UNIVERSITY

Diet and the science of dietetics are greatly occupying the minds of both the medical profession and the public at the present time. One hears the man in the street, or perhaps more frequently the woman in the drawing room, discussing more or less learnedly food values, vitamins, mineral salts and so on. In spite of the fact that Professor Gowland Hopkins of Cambridge University was a pioneer in the discovery of the vitamin element in food, and that Professor Orr of Aberdeen has made the most important researches into the value of the mineral salts in diet, the scientific study of dietetics in this country lags behind that of America. In hospitals here diet kitchens are almost unknown, and indeed the question of a diet to conform with the state of health of the individual is greatly neglected. There are signs, however, that interest is being aroused in all classes of society with regard to the kind of food suitable to different persons in sickness and in health. It is recognized that many ailments and even diseases may be prevented, or largely prevented, by a carefully arranged diet. That the public in this is becoming concerned with the food question has been illustrated recently by the offer of a lady to give £10,000 ($50,000) towards founding a chair of dietetics in the University of London.

INFLUENZA IN GREAT BRITAIN

On January 26 the Ministry of Health gave out the following official figures of the influenza death roll: Week ending January 8, in 105 great towns, 172; in London County, 72. Week ending January 15, in 105 great towns, 826; in London County, 137. Week ending January 22, in 105 great towns, 470; in London County, 197. In the 105 great towns, which include London, the total deaths for five weeks were 500 more than for the corresponding period last year.

LEGISLATIVE NOTES

THE HEARING ON THE BILLS TO REGISTER CHIROPRACTORS

On February sixteenth the bills designed to secure the registration of chiropractors were given a hearing before the Committee on State Administration.

The proponents were represented by imported talent from New York and a retained lawyer. The arguments were in substance that chiro-

practic is a scientific method by which health is secured, that sufficient instruction and training is given in the chiropractic schools to enable these practitioners to meet the needs of the people and that no harm would come to the public through the ministrations of these people. The lawyer for the chiropractors announced that there would be no acrimonious criticism of the medical profession but interjected a statement, which he claimed was a quotation from the *Journal of the A. M. A.*, that there are fifty per cent. of errors in the diagnosis of cancer to the discredit of the medical profession.

He asked that all who were present who had been treated by regular physicians without benefit but who had been cured by chiropractic to stand and a large proportion of the audience rose.

The opposition as voiced by Dr. James S. Stone and Dr. O'Brien representing the Legislative Committee of the State Societies, Dr. Vaughan of the Board of Registration in Medicine, Mr. Frank Kiernan of the Massachusetts Tuberculosis League and Dr. Charles Morgan contended that all who desired to practice the healing art should meet the requirements established by the State and that the single standard of fitness to practice should be maintained.

It was quite evident that several members of the Committee have been led to believe that the state needs chiropractors because efforts were made to get admission from the doctors that chiropractors help patients and that no harm would follow recognition of this cult.

It will be very unfortunate if our already too low standards are made more liberal for history shows that the licensing of cults, although with certain plausible restrictions in the letter of the law, always opens the door to more general practice of medicine than is permitted in the act. We hope that the legislation will not be stampeded by the plea for recognition which will in the end bring undesirable complications in dealing with communicable disease and mortality statistics.

It is strange that with all the evidence of the great benefits to mankind through scientific medicine, the people can be led to expect any worth while benefits from the practice of comparatively uneducated doctors.

No sooner does one cult gain a foothold than another strives to squeeze in through a breach in the wall created to protect the state from incompetent practice.

Even if the proposed legislation should be enacted we have confidence in the wisdom of the Governor in dealing with this matter.

RESUME OF COMMUNICABLE DISEASES REPORTED IN MASSACHUSETTS FOR JANUARY, 1927

GENERAL PREVALENCE

Disease was about 30 per cent. more prevalent in January, 1926, than in January, 1927, due principally to the measles epidemic of last year. This month's incidence is about normal for this time of the year. Scarlet fever has contributed more cases to the total than any other disease.

Mumps and scarlet fever were reported in larger numbers than in any previous January. Typhoid fever and chickenpox also were more prevalent than usual. Whereas diphtheria is beginning to increase from its unusualy low incidence, it is still about 20 per cent. lower than expected. Anterior poliomyelitis and measles had an unusually low incidence: poliomyelitis had one-half as many cases as expected and measles one-third as many as expected.

Diphtheria was unusually prevalent in Haverhill, Leominster, Springfield and Waltham.

Measles was unusually prevalent in Franklin, Haverhill and Pittsfield.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

Disease	Cases in entire population				Case rates per 100,000 population		
	Jan., 1927	Jan., 1926	Prosodemic index	Ratio of incidence to index	Jan., 1927	Jan., 1926	Expected rate‡
All causes	9,117	13,820	—	—	213.5	327.6	—
Anterior poliomyelitis	6	6	11*	.5†	.1	.1	.2
Diphtheria	461	391	572*	.8†	10.8	9.3	13.4
Measles	719	6,573	2,456*	.3†	16.8	155.8	57.5
Pneumonia, lobar	592	759	653*	.9†	13.9	17.9	15.3
Scarlet fever	2,150	1,289	1,230*	1.7†	50.4	30.6	28.8
Tuberculosis, pulmonary	404	426	328*	1.2†	9.5	10.1	7.7
Typhoid fever	36	27	25*	1.4†	.8	.6	.6
Whooping cough	641	1,683	768*	.8†	15.0	39.9	17.9
Chickenpox	1,729	1,145	—	—	40.5	27.1	—
German measles	62	251	—	—	1.5	5.9	—
Influenza	74	57	—	—	1.7	1.3	—
Mumps	1,272	343	—	—	29.8	8.1	—
Tuberculosis, other forms	66	53	—	—	1.5	1.3	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The methods used to determine the index will be described in an early issue of the JOURNAL.

‡Calculated from the Prosodemic Index.

Scarlet fever was unusually prevalent in Dedham, Fairhaven, Franklin, Lexington, Lynn, Pittsfield, Quincy, Somerville and Watertown.

RARE DISEASES

Actinomycosis was reported from Quincy, 1.

Anterior poliomyelitis was reported from Boston, 2; Cheshire, 1; Fall River, 1; Quincy, 1; Worcester, 1; total, 6.

Anthrax was reported from Lowell, 1.

Dog-bite requiring anti-rabic treatment was reported from Arlington, 1; Billerica, 1; Boston, 9; Chelsea, 4; Holyoke, 2; Lowell, 4; Marlboro, 2; Quincy, 1; Revere, 2; Weymouth, 1; total, 27.

Encephalitis lethargica was reported from Belmont, 1; Lynn, 1; Malden, 1; Northampton, 1; Somerville, 1; Waltham, 1; total, 6.

Epidemic cerebrospinal meningitis was reported from Fall River, 1; Pittsfield, 1; Somerville, 1; Springfield, 1; Winchester, 1; total, 5.

Pellagra was reported from Ware, 1.

Septic sore throat was reported from Boston, 10; Brookline, 1; Cambridge, 1; Canton, 1; Everett, 1; Fall River, 1; Greenfield, 1; Mansfield, 1; Medford, 1; New Bedford, 1; Newton, 1; Williamsburg, 1; Worcester, 3; total, 24.

Tetanus was reported from Boston, 1.

Trachoma was reported from Boston, 2; Cambridge, 1; Fall River, 1; total, 4.

NOTICE

RESULTS OF THE NOVEMBER, 1926, EXAMINATION CONDUCTED BY THE MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

PHYSICIANS REGISTERED BY EXAMINATION

Albert, Edmund Alfred, Massachusetts Homoeopathic Hospital, Boston, Mass.
Angell, David Morrison, 350 K Street, South Boston, Mass.
Arbor, Benjamin, 333 East Fifty-sixth Street, New York City, N. Y.
Bailey, Percival, 721 Huntington Avenue, Boston, Mass.
Barker, Nat. Bailey Twycross, 312 South Wild Olive Street, Daytona Beach, Fla.
Berger, Charles George, 2A Milford Street, Boston, Mass.
Blais, Robert Ernest, Bracewell Building, Dover, N. H.
Bragger, James Keenan, 397 Newton Street, Chestnut Hill, Mass.
Burns, Arthur Vincent, St. Elizabeth's Hospital, Brighton, Mass.
Brown, Charles Leonard, Peter Bent Brigham Hospital, Boston, Mass.
Caravaglio, Joseph John, 135 Alder Street, Waltham, Mass.
Chaimson, Harry, 620 Washington Avenue, Bridgeport, Conn.
Coleman, Ralph Kenneth, 127 Westford Street, Lowell, Mass.
Colton, Florence Amanda, 181 Main Street, East Northfield, Mass.
Copp, Edgar Leroy, 321 Cooper Street, Camden, N. J.
Cruckshank, May Evelyn, 44 Standard Street, Mattapan, Mass.
Curtis, Walter Stanley, New England Deaconess Hospital, Boston, Mass.
Des Jardins, Anatole, Boston City Hospital, Boston, Mass.
Despres, Francis Xavier, Suite 3, 108 Norway Street, Boston, Mass.
Douglass, MacLure, 1175 Boylston Street, Boston, Mass.
Duff, Ella Ishbel, 74 Fenwood Road, Boston, Mass.
Dunn, Louis Bennett, Boston City Hospital, Boston, Mass.
Edmands, Amy Harriet, 260 Main Street, Webster, Mass.
Ehrlich, Simon, 22 Woolson Street, Mattapan, Mass.
Fine, Jacob, Massachusetts General Hospital, Boston, Mass.
Friedman, Susannah, Long Island Hospital, Boston, Mass.
Greene, Earle Frederick, 48 Pleasant Street, Ayer, Mass.
Greenwell, Albert Wright, Station Hospital, Fort Banks, Mass.
Hartigan, David James, New Waterford, N. S.
Horne, Herbert Quimby, Boston City Hospital, Boston, Mass.
Israel, Cyril, Fairlawn Hospital, Worcester, Mass.
Johnson, Arthur William, 232 Cedar Street, Wellesley Hill, Mass.
Johnson, Gilbert Henry, New England Sanitarium and Hospital, Melrose, Mass.
Kappius, Meinolph V., 221 Longwood Avenue, Boston, Mass.
Kassels, Maurice Emanuel, 25 Newton Street, Malden, Mass.
Krantz, Clement Ireneus, Huntington Memorial Hospital, Boston, Mass.
Labinsky, Irving, 24 Duke Street, Mattapan, Mass.
Leonard, Edward Joseph, 62 Bowdoin Avenue, Dorchester, Mass.
Levi, Alexander Abraham, Grafton State Colony, North Grafton, Mass.
Linnehan, Edward Henry, Boston City Hospital, Boston, Mass.
Longpré, Fernand, Taunton State Hospital, Taunton, Mass.
McEnelly, Francis Joseph, 43 Richards Street, Worcester, Mass.
McGrath, Laurence Wilfred, 54 Maywood Street, Roxbury, Mass.
Mahoney, Roy Bernard, 89 Montgomery Street, Chicopee Falls, Mass.
Marquardt, Matthias, 109 Corey Street, Augusta, Me.
Middleton, Harvey Nathaniel, 27 Braddock Park, Boston, Mass
Miesch, Lorenz Alba, Western State Hospital, Bolivar, Texas.
Miller, Ralph Thompson, Long Island Hospital, Boston, Mass.
Milliken, Grace, 120 Coolidge Street, Brookline, Mass.
Monroe, Robert Thornhill, Suite 9, 40 Jamaicaway, Boston, Mass.
Mooney, Clifford Osman, 16 Melville Avenue, Newtonville, Mass.
Moyle, Henry Brown, Worcester State Hospital, Worcester, Mass.
Orr, Louis, 352 Marlborough Street, Boston, Mass.
Papalia, Philip Dewey, Emergency Hospital, Washington, D. C.
Paul, Louis Robert, 107 Homestead Street, Roxbury, Mass.
Poplock, Samuel Lewis, Mt. Sinai Hospital, New York City, N. Y.
Resnick, Sarle, 687 Boylston Street, Boston, Mass.
Rodman, Isaac, Long Island Hospital, Boston, Mass.
Russman, Benjamin, 28 Rockland Street, Roxbury, Mass.
Scamman, Charles Linwood, 275 Lowell Avenue, Newtonville, Mass.
Scigliano, Frank Peter, Cambridge City Hospital, Cambridge, Mass.
Silverman, Nathan, Maine General Hospital, Portland, Me.
Smith, Walter Bruce, State Hospital, Taunton, Mass.
Spalding, Manford Root, Central Building, Whitinsville, Mass.
Steere, Kenneth Warren, 10 Holmfield Avenue, Mattapan, Mass.

Steinberg, Saul, 32 Park Drive, Brookline, Mass.
Sullivan, Daniel Cornelius, 49 Tonelle Avenue, Jersey City, N. J.
Tenney, Benjamin, Jr., Massachusetts General Hospital, Boston, Mass.
Trumbull, Lawrence Ray, 67 Lovett Street, Somerville, Mass.
Udin, Miriam Sonia, 61 Washburn Avenue, Auburndale, Mass.
Vallieres, Joseph Lean, 90 Pinard Street, Manchester, N. H.
Waldman, Daniel, 108 Columbia Road, Boston, Mass.
Warden, Frank Ryan, Adamsville, R. I.
Weeks, Joshua Herbert, 33 South Sixth Street, New Bedford, Mass.
Wilens, Gustav, 300 Longwood Avenue, Boston, Mass.
Wilkinson, Marion Dinwoodie, Belmont Hospital, Worcester, Mass.
Williams, George Dee, 10 Sacramento Street, Cambridge, Mass.
Zytkiewicz, John Michael, 44 Claremont Avenue, Holyoke, Mass.

REJECTED—NOVEMBER EXAMINATION, 1926—WITH DATE OF GRADUATION OF EACH APPLICANT

St. Louis College of Physicians and Surgeons—1922-22-22-22-23-23-23-25-25-25-26-26-26.
Middlesex College of Medicine and Surgery—1922-22-23-23-23-24-25-25-25-25-25-26-26.
Massachusetts College of Osteopathy—1923-26-26-26-26-26-26.
Kansas City College of Physicians and Surgeons—1926.
Western University, London, Canada—1911.
A. T. Still College of Osteopathy—1926.
American School of Osteopathy—1926.
Philadelphia College of Osteopathy—1925.
Laval—1925.
College of Physicians and Surgeons, Boston—1926.

REPORTS AND NOTICES OF MEETINGS

MASSACHUSETTS STATE NURSES' ASSOCIATION

THE mid-winter meeting will be held March 1, 1927, in Boston.

The Public Health Section will meet in the Lecture room, Boston Public Library. The other meetings will be in the John Hancock Building.

For program address Miss McMahon, Boston State Hospital.

MEETING OF THE AMERICAN COLLEGE OF SURGEONS, NEW ENGLAND SECTION, FEBRUARY 28—MARCH 1, 1927

HEADQUARTERS and registration at the Bond Hotel.

Clinics from 9:00 to 11:00 at the hospitals on the morning of both days.

Clinical addresses from 11:30 to 12:30 P. M. in the ballroom of the Hartford Club on Monday, February 28, and in the ballroom of the Bond Hotel on Tuesday, March 1.

Luncheon at the Hartford Club from 12:30 to 1:30 P. M. on Monday, February 28.

A Hospital Meeting from 2:00 to 4:30 P. M. on Monday, the 28th, in the Auditorium of the Hartford Medical Society Building.

A meeting of the Fellows of the American College of Surgeons from 4:30 to 5:00 P. M. on Monday, the 28th, in the Auditorium of the Hartford Medical Society Building.

A dinner at 7:00 P. M. on Monday, the 28th, in the ballroom of the Hartford Club, followed by addresses on scientific subjects by visiting speakers.

A Hospital Standardization Round Table Conference from 9:00 to 11:30 A. M. on Tuesday, the 1st, in the ballroom of the Bond Hotel.

A Scientific Meeting from 2:00 to 4:30 P. M. on Tuesday, the 1st, in the ballroom of the Bond Hotel.

A Community Health Meeting at 8:00 P. M. on Tuesday, the 1st, in the Broad Street Auditorium of the Hartford Public High School.

STAFF CLINICAL MEETING

STAFF Clinical Meeting, Boston City Hospital, Cheever Surgical Amphitheatre, Saturday, Feb. 26, 1927, at 11 A. M.

Demonstration of cases by members of the medical and surgical staff. Discussion of the cases invited.

Physicians, medical students and nurses invited.

JOHN J. DOWLING, *Superintendent.*

MEETING OF THE WORCESTER DISTRICT MEDICAL SOCIETY

THE February meeting of the Worcester District was held in the evening of February 9th at the Chamber of Commerce Building. Following a short business meeting at six thirty, seventy-five fellows of the Society sat down to dinner at the Hotel Bancroft. At eight o'clock President Trowbridge introduced Dr. John C. Bloodgood of Baltimore as the speaker of the evening.

Dr. Bloodgood discussed the cancer problem in its various phases, illustrating his talk with numerous instructing lantern slides. The speaker emphasized the importance of early diagnosis and the absolute need of educating the laity to its dangers.

Dr. Bloodgood recommended early radical surgery in cases of operative cancer. He believed that radium and the X-ray were very useful in the later stages of cancer.

Dr. G. H. Bigelow, State Commissioner of Health, and Dr. F. B. Balch, Chairman of the Massachusetts Section of the American Society for Control of Cancer discussed the cancer problem of our own state. They agreed with Dr. Bloodgood that early diagnosis of cancer is absolutely necessary.

The meeting was adjourned at 10 P. M.

In the afternoon Dr. Bloodgood conducted a clinic at the Out-Patient Department of the City Hospital.

Ten patients presented themselves for examination by Dr. Bloodgood. Dr. E. L. Hunt was in charge of the organization of the clinic.

EARL E. FIPPHEN, *Reporter.*

RECONSTRUCTION CLINIC

366 COMMONWEALTH AVENUE

THE regular monthly clinical meeting of the Physiotherapy Department will be held on Friday, February 25, 1927, at 8:00 P. M.

Subject: Medical Diathermy with Clinical Demonstrations, followed by open hour of discussion.

Physics of High Frequency and construction of apparatus demonstrated.

A cordial invitation to these meetings is extended to physicians.

MEETING OF THE ESSEX SOUTH DISTRICT MEDICAL SOCIETY

THE Essex South District Medical Society held its regular meeting and dinner at the Hawthorne Hotel, Salem, on Feb. 2, 1927, at 7 P. M.

The speaker of the evening was Dr. Howard M. Clute, of Boston, whose subject was "Differential Diagnosis and Treatment of Thyroid Disease. Discussion by Dr. P. P. Johnson of Beverly and Dr. M. T. Fields of Salem.

Attendance 78.

WM. T. HOPKINS, *Reporter.*

BOSTON ASSOCIATION FOR ADVANCEMENT OF COLORED PEOPLE

THE annual meeting of the Boston Branch of the National Association for the Advancement of Colored People for the election of officers and the transaction of any other business which may properly come before the meeting was held at Chipman Hall, Tremont Temple, on Wednesday evening, February 16th.

The Boston Branch affiliates with the parent organization with headquarters in New York, which assumes the purpose of advancing people of all races and creeds.

At this annual meeting, Butler R. Wilson, the President, and Miss Edith Parris, the Secretary, presided. The following speakers spoke expressing their views of current affairs and their relation to the work of the Association: William Pickens, Rev. George L. Paine, Lawrence G. Brooks, Rev. Cassius A. Ward, Rev. H. D. Greene, George G. Bradford and Edward B. Barco.

The branch entertained as its special guests, Miss Alice P. Tapley, Moorfield Storey and William Pickens, all of whom are vitally interested in the work in this city.

The local office of the Association is at 43 Tremont Street, Boston.

HARVARD MEDICAL SOCIETY

THE next regular meeting of the Harvard Medical Society will be held as usual in the amphitheatre of the Peter Bent Brigham Hospital, March 1, 1927, at 8:15 P. M. The program follows:

1. Presentation of Cases.
2. "Some Recent Research on the Production and Loss of Heat in the Human Body," by Professor Francis G. Benedict, Director of Carnegie Nutrition Laboratory.

There will be lantern slides.

All members of the medical profession, medical students and nurses are invited.

THE TRUDEAU SOCIETY

THE next meeting of the Trudeau Society of Boston will be held on Tuesday, March 8, 1927, at 8:15 P. M., in Sprague Hall, Boston Medical Library, 8 The Fenway, Boston.

The speaker will be Dr. Bayard T. Crane of Rutland; subject: "The Theory Underlying the Central New England Sanatorium and Industrial Colony." The discussion will be opened by Dr. Vincent Y. Bowditch.

Physicians, medical students and nurses are cordially invited to attend this meeting.

RANDALL CLIFFORD, *Secretary.*

MEETING OF THE NORTH SHORE MEDICAL FRATERNITY

AT a meeting of the North Shore Medical Fraternity held at Lynn, February 10, the following officers were elected for the ensuing term:

President, Dr. Elijah Levine; Vice-President, Dr. Samuel Perlmutter; Secretary, Dr. Ellis Michelson; Treasurer, Dr. Max Lessees; Executive Committee, Dr. Edward Schon, Dr. William Dorfman, Dr. Louis Segal, Dr. Barnet Wein, Dr. Saul Marcus.

At the close of the business meeting, the Society was addressed by Dr. Bernard Appel, his subject being the Value of Bismuth in the Treatment of Syphilis.

ELLIS MICHELSON, *Secretary.*

CONFERENCE OF TUBERCULOSIS WORKERS

ONE HUNDRED tuberculosis workers from all parts of the Commonwealth gathered at the Copley-Plaza Hotel, Boston, Monday, February 7, for an all-day conference under the auspices of the Massachusetts Tuberculosis League.

The morning session was a joint meeting of the local secretaries of the twenty-seven affiliated organizations of the League and the students of the New England Tuberculosis Institute, which was held for two weeks at the Harvard School of Public Health. The subject of the

morning session was "The Christmas Seal Sale." It was presided over by Frank Kiernan, Executive Secretary of the Masachusetts Tuberculosis League. Frederic Edwards, Executive Secretary of the Hampden County Tuberculosis and Public Health Association, spoke on "Fundamentals in Christmas Seal Sale Work." Mrs. B. Milo Burke of Brockton, Chairman of the Plymouth County Seal Sale Committee, described the work of her all-year round standing Committee of the Plymouth County Health Association. Dr. S. L. Skvirsky of Holyoke, Chairman of the 1926 Seal Sale Committee in that city, described "How the Holyoke Seal Sale Results Were Doubled in 1926." Following the formal papers general discussion was had in which Miss Bernice W. Billings, R.N., of the Boston Tuberculosis Association, Miss M. Alice Gallagher, R.N., of Norfolk County, Mrs. Esther E. Moore, Seal Sale Executive of Southern. Worcester Health Association, Miss Mary C. Hoisington, R.N., of Southern Middlesex Health Association, Mrs. Mabel Greeley Smith, Executive Secretary of the Cambridge Anti-Tuberculosis Association, and others took part. Dr. Philip P. Jacobs, Publicity Director of the National Tuberculosis Association, made a resume of the proceedings of the morning. Following this, Dr. Mary R. Lakeman of the State Department of Public Health addressed the gathering on the State Cancer Program and pending legislation to secure pasteurization of the milk supply of the Commonwealth.

A luncheon meeting followed, at which Dr. Frederick T. Lord, Vice-president of the Massachusetts Tuberculosis League, presided in the abence of the President, Dr. Kendall Emerson, who was attending a meeting of the National Tuberculosis Association Board of Directors at Nashville, Tennessee. The speakers at the luncheon were Dr. Philip P. Jacobs of the National Tuberculosis Association who spoke on "Some Immediate Needs in the Anti-Tuberculosis Campaign," Mr. Sydney W. Ashe of the General Electric Company in Pittsfield who spoke on "Tuberculosis in Industry" and Dr. Henry D Chadwick, Acting Director of the Division of Tuberculosis of the State Department of Public Health, whose subject was "What We Have Learned So Far in the Ten Year Program fo Children."

Dr. Jacobs deplored the faulty reporting of tuberculosis after the campaign has gone on throughout the country for twenty years. He said, "For more than twenty years the State of Massachusetts and most of the other states in the Union have required that tuberculosis should be reported by the physicians of the state as a communicable disease. The records of reporting of tuberculosis as compiled from health department figures, both in this most progres sive state and in others, indicate how poorly this task has been done. In some instances fewer cases than annual deaths are reported to the health authorities; in others not more than one case for each annual death, and an average o three cases for every annual death is extremely high, taking the country as a whole into consideration. Yet the records of the Framingham Health and Tuberculosis Demonstration, the Cattaraugus County Demonstration, and numerous studies of the National Tuberculosis Association clearly indicate that any normal American community may anticipate from 5 to 9 active cases for every annual death."

He complimented Massachusetts on its advanced work in the prevention of tuberculosis among children. He stressed, however, the need of similar work among adults, especialy the industrial population. Speaking on this point, Dr. Jacobs said, "What you are doing with children needs to be done with adults, particularly in that age group between 15 and 45 where tuberculosis is at present not declining but increasing. The state as a whole and the industries of the state in particular must begin to appreciate the importance of finding tuberculosis. Of the young men and women who are now engaged in producing the bulk of the wealth of this and of other states, a very large percentage, how large we cannot adequately tell, will be dead with tuberculosis within the next twenty-five years. Picture the economic loss, not only from the death of these men and women, but from the subsequent impoverishment of their families and dependents and the continuance of the vicious circle of disease, infection and further disease. If our communities are to attain the control of tuberculosis they must find the cases of this disease and find them early."

Follow-up of patients discharged from sanatoria he indicated was also faulty throughout the country and recommended to the tuberculosis workers study of this problem.

In his address, Mr. Ashe indicated the outstanding needs of anti-tuberculosis work among the industrial groups and cited six cases of individuals who had come under his observation. He said, "A preliminary survey of the extent to which tuberculosis work is followed in industry seems to indicate that little in an organized way is being done in our Commonwealth. This is, no doubt, due partly to the magnitude of the problem, to the extent of financial resources required, medical and educational work necessary to institute a plan which will function 100% and take care of all phases of the problem from an economic standpoint as well as a medical standpoint. While the State of Massachusetts, through its Medical Department and State Charities, has facilities to cope with the problem, the aid which industry can give to the tuberculosis problem is so direct in handling quickly and effectively the individual cases that

come up, that it is the purpose of our industrial committee to further the work in industry to a greater extent by outlining a complete plan of operation for industry, using so far as possible existing local agencies for handling the work, supplementing these agencies where necessary with organized medical and relief work in the industry itself."

Dr. Chadwick said that the State Department of Health clinics had everywhere received from parents, physicians, school authorities, nurses and social workers the most helpful coöperation since the beginning of their systematic campaign of examinations of school children two years ago. He continued,

"There were examined over 10,000 white school children between the ages of 5 and 15. Of these three-fifths were girls and two-fifths boys. More children were examined in the 10-15 age group than in the 5-10 age group. As these examinations are primarily for underweight children and children who were exposed to human tuberculosis, this means that underweight for height and age occurs more often in children between 10-15 years of age. The reason for the greater number of girls examined is either that more girls are underweight or that there is a larger number of girls in our public and parochial schools. In this connection the fact that four-fifths as many girls as boys in the age group 10-15 die from tuberculosis is significant.

"Approximately 29% reacted to the tuberculin (Von Pirquet) test. Strange as it may seem, this percentage is the same for urban and rural children. 28% of the reactors give a history of exposure to human tuberculosis, and of these 25% were immediate, intimate contact with father, mother, sister or brother, or both; and only 2% give a history of remote contact, i. e., grandparents. On the other hand, 12% of urban children and 15% of rural gave a history of contact but did not react to the test. The tuberculin test was refused by 7% of the parents.

"A diagnosis of hilum tuberculosis was made in 5% of both urban and rural children examined, which is 18% of those who reacted to the tuberculin test. 45% of the reactors were found 'suspicious.' In the urban reactors 1.1% were found to have pulmonary tuberculosis against 0.23% in the rural reactors.

"While the examination concerns itself primarily with the finding of 'Hilum,' 'Suspicious' and 'Pulmonary' cases, other defects cannot be ignored, especially such defects as may have some bearing on or be the direct cause of underweight and malnutrition.

"Among such defects visible cervical glands were found in 8% of the rural children against 6% in the urban. In the urban children these glands were found just as frequently in the reactors as in the non-reactors. Of the rural reactors 11% showed these glands to 6% of the non-reactors. These figures show that visible glands in the cervical region are not necessarily tuberculous in origin as some seem to think. The 11% in the rural reactors is hard to explain.

"Asthma was found more frequent in the rural than in the urban children. Untreated dental caries was found more frequent by 5% in the urban than in the rural children. Enlarged and diseased tonsils and adenoids were found 30.9% in the rural against 26.2% in the urban children. On the other hand, tonsils and adenoids were found removed equally often in the city and country children—about 33%. This indicates that in Massachusetts, at least, children in the country are just as accessible to surgical treatment as city children. Poor posture occurred in about 60% of the children.

"Valvular heart defects were found alike in the city and country children, about 1.7%. As a possible etiological factor in these heart cases, tonsilitis ranks first, scarlet fever second, rheumatism and chores third.

"The results given above are of interest from the point of view of clinical statistics. The more important and practical results of these examinations to the children can be left only to the future. Already, as these children are being reëxamined this year there is gained the impression that underweight is being lessened and physical defects are being corrected. As a result of the reëxaminations many children have been taken to family physicians for advice and treatment. A good many children have had the benefit of summer camps and some of preventoria. These results are made possible by the splendid coöperation of local public health and school officials, and public health and school nurses."

Following the luncheon meeting the Board of Directors of the Tuberculosis League held their semi-annual meeting. In the afternoon, sessions of the New England Tuberculosis Institute and of the Secretaries of the affiliated organizations of the League were held separately. Dr. Henry D. Chadwick was the speaker at the Institute session and Miss Anna W. Johnson, Educational Secretary of the League, presided at the Secretaries' Meeting.

In the evening a social meeting was held at the new home of the Boston Tuberculosis Association.

SOCIETY MEETINGS

District Medical Societies

Essex North District Medical Society

Wednesday, May 4, 1927—Annual meeting. Russell Hall, Young Men's Christian Association Building, 40 Lawrence Street, Lawrence.

Thursday, May 5, 1927—Censors meet for examination of candidates at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M.

Essex South District Medical Society

Wednesday, March 2, 1927—Lynn Hospital. Clinic, 5 P. M.; supper, 7 P. M. Dr. George Minot, "Pernicious Anemia, with Special Reference to Liver Diet." Discussion by Drs. Sargent of Salem and Reynolds of Danvers, ten minutes each.

Wednesday, April 6, 1927—Danvers State Hospital. Clinic, 5 P. M. Dr. Allan W. Rowe, Chief of Research Service at Evans Memorial, "The Differential Diagnosis of Endocrine Disorders." Followed by dinner. Discussion by Drs. Wood of Hathorne and Kline of Beverly, ten minutes each.

Thursday, May 5, 1927—Censors meet for examination of candidates at the Salem Hospital, 3:30 P. M.

Wednesday, May 11, 1927—Annual meeting. The Tavern, Gloucester. Speaker and subject to be announced later.

Norfolk District Medical Society

Below are the proposed meetings of the Norfolk District for the remainder of the year. Minor changes may be made in case of necessity.

March 1, 1927—Roxbury Masonic Temple, 8:15 P. M. Dr. Robert B. Greenough. To be devoted to a talk on cancer, with a résumé of the results of colloidal lead treatment.

March 29, 1927—Roxbury Masonic Temple, 8:15 P. M. Drs. F. S. Newell and F. J. Irving, "The Modern Treatment of the Eclampsias and Toxaemias of Pregnancy." If time permits—"The Modern Methods of Handling Prospective Caesarean Cases."

May 10, 1927—Annual meeting. Details of meeting to be announced.

Suffolk District Medical Society

Meetings of the Suffolk District Medical Society and the Boston Medical Library will be held at the Boston Medical Library, 8 The Fenway, Boston, at 8:15 P. M., as follows:

March 30, 1927—Medical Section. Subject and speaker to be announced later.

April 27, 1927—Annual meeting. Election of officers. "Medical Education in the Orient and Occident," Dr. David L. Edsall, Dean, Harvard Medical School.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

BOOK REVIEWS

Muscular Contraction and the Reflex Control of Movement. By J. F. FULTON, B.Sc., M.A., Ph.D. The Williams & Wilkins Company, Baltimore, 1926, 15 + 644 pages.

No phase of human activity has interested man, throughout the ages, more than muscular motion. Movement, to many, has meant life, and the study of life has been one of the goals of physiology and medicine. From the time of Aristotle to the present, the history of the extraordinary development of our knowledge of the physiology of muscle is one of the most interesting in all medical history. The long series of events and discoveries leading up to our present conception of muscular motion and its reflex control is very completely reviewed by Dr. Fulton in his historical introduction. In no other treatise can be found such a concise history, fully illustrated with photographs of the important books and with diagrams.

Although there were many gaps in the line of investigation of muscle physiology before the 18th century, the march of progress since then has been a fairly steady one. The last great step in this advancement can be conveniently dated by the publication of Sherrington's "Integrative Action of the Nervous System," 1911. Sherrington did more to advance our knowledge of neuro-muscular physiology than any previous investigator. Since that time, however, many workers have contributed papers of importance to this subject and Dr. Fulton's monograph is especially valuable in summarizing the work of the last fifteen years.

The first eight chapters of the monograph deal with the nature of muscular contraction. Careful consideration is given to the electrical, mechanical, and thermal aspects of the muscular response. In Chapter IX he gives a résumé of the facts as observed in the physiological laboratory and the theories which have been developed to account for them. No one theory is quite satisfactory to the author, but Garner's liquid crystal hypothesis, in Dr. Fulton's opinion, offers greater promise than any that has hitherto been put forward. (Page 255.)

The author then passes on, in Part II, to a detailed consideration of the integrative control exerted by the central nervous system upon skeletal muscle fibres in the performance of movement and in the maintenance of posture. Great stress is rightfully laid, in the latter half of the book, on posture as an expression of reflex action, and the work of Sherrington, Magnus and their numerous co-workers is fully set forth.

Perhaps the most valuable chapter, from the clinical viewpoint, is that on the cerebellum, a section which covers as no other work has done this difficult field. The nature of the higher control of reflex activity is discussed as the final chapter of the book. In the appendix are to be found details of the torsion wire myograph so useful in the study of muscular contraction. One also finds a very excellent bibliography of over 1,000 references and a complete index, both of which are so arranged that the book may be very easily used for reference.

The monograph is a timely contribution and of very great worth. The material is extraordinarily well digested and presented in a readable and convenient form. A considerable portion of the book reports the results of original experiments by the author.

International Clinics. Vol. IV. 36th series. J. B. Lippincott Co., Philadelphia. 1926. pp. 308.

There are a number of valuable articles in this number of International Clinics. That by Wegelin on the pathologic anatomy of endemic goiter and that by Barker on the use of novasurol in cirrhosis hepatis are of particular interest.

The Practical Medicine Series (1926): Surgery. Edited by EVARTS A. GRAHAM, A.B., M.D. The Year Book Publishers, Chicago.

This handy volume of the year's progress in Surgery, which in previous years had been edited by the late Dr. A. J. Ochsner, is now edited under the able leadership of Dr. Evarts A. Graham, Professor of Surgery of the Washington University School of Medicine. The aim of the book is to present briefly abstracts of methods of treatment, both operative and post-operative; newer ideas of the origin of surgical conditions; pathology of surgical lesions and methods of diagnosis.

The subjects taken up at greater length are: Cancer in its many phases; X-ray, not only diagnostic but also therapeutic in types of disease hitherto considered as purely surgical; Ulcer of the Stomach and Duodenum and an especially illuminating discussion of many men on the subject of Cholecystography by the Graham-Cole method.

This book should be of great practical value, particularly to the surgeon who has not an easy access to the medical libraries of the larger cities.

Our Doctors. A Novel of Today. By MAURICE DUPLAY. Translation and Preface by JOSEPH COLLINS. Published by Harper & Brothers, New York. 279 pages. Price $2.00.

A story of present-day medical men in Paris, written by the son of a doctor. The tale is entertaining, and accurate enough as far as its medical aspects are concerned. The characters are puppets; the tale reads more like a film scenario than like a real novel.